SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO

RAD: 14-42252- -4 **FECHA**: 2015-07-17 18:00:28
DEP: 2020 DIRECCION DE NUEVAS CREACIONES **EVE:** 378 FASE NACIONAL INCLUIDO CAPITULO I
TRA: 11 PCT-PATENTE DE INVENCION CAPITULOS I Y II **FOLIOS**: 7
ACT: 519 TRASLADOINFORME

DIRECCIÓN DE NUEVAS CREACIONES

2020
Bogotá, D.C.,

Abogado(a)/Señor(a)
CARLOS R. OLARTE GARCIA

Asunto: Radicación: 14-42252- -4
Trámite: 11
Evento: 378
Actuación: 519
Oficio: 8394
Folios: 7

Patente de Invención	X			Patente de Modelo de Utilidad	
Vía Nacional					
Vía PCT (Fase Nacional)	X	Capítulo I	X	Capítulo II	
No. Solicitud Internacional	PCT/US2012/050807				
Fecha de Presentación Internacional	14/08/2012				

Como resultado del examen de fondo realizado, con fundamento en el Artículo 45 de la Decisión 486 de la Comisión de la Comunidad Andina, se comunica:

1. Documentos estudiados

Descripción:	Radicado N° 14-042266-00000-0000	27/Febrero/2014
Reivindicaciones:	Radicado N° 14-042266-00000-0000	27/Febrero/2014
Dibujos:	Radicado N° 14-042266-00000-0000	27/Febrero/2014
Secuencias:	Radicado N° 14-042266-00000-0000	27/Febrero/2014
Prioridad:	US 61/528,149	27/Agosto/2011
	US 61/528,153	27/Agosto/2011

2. Análisis de la Prioridad

Se acepta la reivindicación de prioridad porque ésta solicitud fue presentada dentro del plazo establecido (Art. 9 D 486) y su contenido técnico corresponde con el de la prioridad reivindicada.

3. Objeto de la invención

De acuerdo con lo establecido en el numeral 1.2.2.2 del Título X de la Circular Única para efectos del examen de patentabilidad, se tendrá en cuenta la tasa pagada por el solicitante al momento de comenzar el examen para las reivindicaciones adicionales; esto es que cuando la solicitud contenga más de diez (10) reivindicaciones y no se haya pagado la tasa complementaria, sólo se estudiarán las cubiertas por la tasa pagada. En el presente caso se

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estudiarán las reivindicaciones 1 a 18 del capítulo reivindicatorio (Radicado N°. 14-042252-00000-0000).

Título de la solicitud: “CEPA BACTERIANA AISLADA DEL GÉNERO BURKHOLDERIA Y METABOLITOS PLAGUICIDAS DERIVADOS-FORMULACIONES Y USOS”.

El problema planteado en esta solicitud consiste en la necesidad de proporcionar nuevos productos plaguicidas con nuevos sitios blanco y nuevos modos de acción.

Para resolver este problema técnico la solicitud en estudio proporciona una especie de *Burkholderia sp* sin patogenicidad conocida para vertebrados pero con actividad plaguicida, métodos para controlar las algas usando dichas especies de *Burkholderia* y productos naturales derivados de un cultivo de dicha especies.

El objeto de la presente solicitud se relaciona con la Clasificación Internacional de Patentes (CIP): C12N 1/20, C12P 1/04, C12N 1/38, A01N 63/02, A01N 43/06, A01N 43/26, A01P 21/00.

4. **Excepción a la Patentabilidad** (Art 20 D (c))

El objeto de la reivindicación 18 no es patentable de acuerdo con el Art citado. Puesto que reclama una semilla, es decir una planta.

5. **Reivindicaciones relativas a un uso** (Art 14 D 486)

El uso de la reivindicación 14 no es patentable, de acuerdo con el Art 14. Toda vez que el objeto reclamado no pertenece a las categorías de producto o procedimiento.

De la misma forma el método para modular la proliferación y/o crecimiento de las algas y/o modular la infestación de un arácnido o de plagas de las reivindicaciones 9-12 y 15-17 corresponden al uso de las formulaciones y combinaciones reclamadas. Es evidente que la llamada etapa de “*aplicar en un lugar donde se desea la modulación de la proliferación y/o modulación de la infestación de un arácnido (…)*” corresponde a la forma de usar la formulación o combinación, aunque en su preámbulo se reclame como método. Se le aclara a la solicitante que cuando un procedimiento presenta una única etapa que corresponde a una aplicación, se considera que dicha aplicación es un uso.

6. **De la solicitud de patente**

Titulo

El título no corresponde con el objeto de la solicitud porque hace referencia a una cepa bacteriana aislada, es decir se refiere a materia no patentable, mientras que el capítulo reivindicatorio refiere a formulaciones, por lo cual se sugiere al solicitante hacer la corrección necesaria.

Reivindicaciones (Art 30 D 486, Art 22 PCT)

1. La reivindicación 1 no es clara porque:
   - Caracteriza al componente (A) de la formulación, es decir la cepa bacteriana aislada o el caldo de fermentación, usando resultados a alcanzar, tales como:
     - Su capacidad de actuar como plaguicida.
     - Su capacidad para producir compuestos plaguicidas con características estructurales determinadas.
     - Su incapacidad de producir respuestas patogénicas en animales vertebrados.
     - Su susceptibilidad a determinados antibióticos.

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Los cuales no son características técnicas esenciales de un componente en una formulación, por lo que se sugiere eliminarlos. Lo mismo es aplicable para la reivindicación 5.

- Caracteriza el componente (B) de la formulación, usando denominaciones genéricas como "*parabeno* C_{1-7}", "*alcohol* C_2-C_{17}" y "*detergente*", las cuales no delimitan de manera adecuada el objeto reclamado.

Se sugiere a la solicitante definir las características técnicas esenciales de la composición reclamada, usando para ello el nombre IUPAC, denominación común internacional o estructura de los componentes que hacen parte del caldo de fermentación y del parabeno, alcohol y detergente que la conforman, así como las proporciones de estos en dicha composición.

2. La reivindicación 2 no es clara porque el término "*aproximadamente*" no es limitativo, por lo que no permite comprender los alcances de la materia reclamada. Se sugiere reemplazarlo por un rango concreto.
3. La reivindicación 3 no es clara porque:
    - Define el proceso reclamado en términos del producto que se espera obtener, el cual no es una característica técnica esencial del mismo.
    - No define de manera adecuada las características técnicas esenciales de las etapas que se reclaman, puesto que no se define el tiempo ni la temperatura de incubación, o las condiciones para realizar el aislamiento del producto esperado.
4. La reivindicación 4 no es clara porque:
    - El término "*combinación*" es ambiguo, ya que no permite comprender si los elementos A y B se encuentran en formulaciones independientes (invención del tipo kit de partes) o si se encuentran presentes como componentes de una única composición o formulación. Debido a que para la evaluación de estos dos tipos de productos se tiene en cuenta diferentes características esenciales, se sugiere a la solicitante que encabece las reivindicaciones de acuerdo a la modalidad que corresponda, sea un kit de partes o una composición, y que defina de manera adecuada sus características esenciales. Lo mismo es aplicable para las reivindicaciones 5, 7 y 8.
    - El término "al menos" no es preciso por lo que no permite comprender el alcance de la materia reclamada.
    - Define los componentes de la composición en términos de función que cumplen de acuerdo a las expresiones "*sustancia efectiva como plaguicida*", "*alguicida o acaricida químico o biológico*", "*portador*", "*diluyente*", "*tensioactivo*" y "*adyuvante*", los cuales no permiten comprender los alcances de la materia reclamada. Se solicita definirlos de acuerdo a su estructura, nombre IUPAC o denominación común internacional y evitar la definición basada en función u origen. Lo mismo es aplicable a las reivindicaciones 5.

5. La reivindicación 5 no es clara ni concisa porque:

    - Presenta una excesiva complejidad, lo cual impide comprender los límites de la materia reclamada.
    - Caracteriza al llamado "*compuesto plaguicida*" por medio de una serie de parámetros tales como: peso molecular determinado por LC/MS, valores de ^{1}H RMN, valores de ^{13}C RMN, tiempos de retención en una cromatografía en fase reversa, bandas de absorción UV, los cuales no son características técnicas esenciales de compuestos, por lo que se sugiere que se modifique la definición para incluir la estructura de los compuestos o su nombre IUPAC.
    - Los términos "*aproximadamente*", "*al menos*", y "*opcionalmente*" no son limitativos, por lo que no permiten comprender el alcance de la materia reclamada. Se sugiere reemplazarlos por rangos concretos o eliminarlos.
    - No menciona características técnicas esenciales diferentes a las ya mencionadas en las demás reivindicaciones, por lo que se considera redundante y se sugiere su eliminación.

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7. Determinación del Estado de la Técnica

El estado de la técnica se determinó con base en la fecha de presentación de la solicitud de prioridad: 27 de agosto de 2011 y se encontraron los siguientes documentos que anticipan el objeto de esta solicitud:

Ítem	Documento	Título	Fecha de Publicación
D1	US 20110207604	Isolated bacterial strain of the genus burkholderia and pesticidal metabolites therefrom	25/Agosto/2011
D2	US 5902595	Pesticidal composition and method of use	11/Mayo/99

D1[1] divulga un una cepa de *Burkholderia sp* sin patogenicidad conocida a vertebrados, pero con actividad pesticida, asi como productos naturales derivados de un cultivo de dicha especie y métodos para el control de pestes en los que se utilicen estos últimos (Resumen).

D2[2] divulga una composición pesticida de alta efectividad letal la cual también puede ser utilizada para eliminar y repeler parásitos, tales como piojos (Resumen).

8. Examen de Patentabilidad (Art 14 D486)

Nivel inventivo (Art18 D486)

La reivindicación 1 consiste en: *"Una formulación que comprende: (A) una cepa aislada o caldo de fermentación que comprende células y medio de cultivo de una (…):"* (Radicado Nº. 14-042252-00000-00000).

Comparación de las características técnicas esenciales, con las del estado de la técnica:

Características esenciales	D1	D2
Formulación que comprende:	Una composición que comprende una combinación de (Pág. 36, Reivindicación 6)	Composición pesticida que comprende:
(A) una cepa aislada o caldo de fermentación que comprende células y medio de cultivo de una no *Burkholderia cepacia*, no *Burkholderia plantari*, no *Burkholderia gladioli*, *Burkholderia sp*. no *Burkholderia cepacia*, no *Burkholderia multivorans*, *Burkholderia sp*. que tiene las siguientes características: (1) secuencia del gen de ARNr 16S que comprende la secuencia delantera que tiene al menos 99% de identidad con la secuencia expuesta en la SEQ ID NO:8, 11, 12 y una secuencia inversa que tiene al menos 99% de identidad con la secuencia expuesta en la SEQ ID NO:9, 10, 13, 14 y 15;	Un cultivo puro, una fracción celular o un sobrenadante derivado de una cepa de Una cepa aislada de una no *Burkholderia cepacia*, no *Burkholderia plantari*, no *Burkholderia gladioli*, *Burkholderia sp*. no *Burkholderia cepacia*, no *Burkholderia multivorans*, *Burkholderia sp*. la cual tiene las siguientes características: (A) una secuencia del gen 16S ARNr que comprende la secuencia delantera que tienen al menos 99% de identidad a las secuencias expuestas en la SEC ID NO:8, 11, 12 y una secuencia inversa que tienen al menos 99% de identidad a las secuencias expuestas en la SEC ID NO:9, 10, 13, 14 y 15; (Reivindicación 1)	Agente pesticida por ejemplo citronelilo, en proporciones de 8-25% v/v (Col. 2, líneas 50-53)
(B) parabeno C_{1-7}, alcohol C_2-C_{17} y detergente	Al menos un vehículo, diluyente, surfactante o adyuvante.	1-40% de alcohol isopropilico, 0.01-5% de metil parabeno, 0.01-5% de propil parabeno, 30-60% de

1http://worldwide.espacenet.com/publicationDetails/originalDocument?CC=US&NR=2011207604A1&KC=A1&FT=D&ND=&date=20110825&DB=&&locale=en_EP
2http://worldwide.espacenet.com/publicationDetails/originalDocument?CC=US&NR=5902595A&KC=A&FT=D&ND=&date=19990511&DB=&&locale=en_EP

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Características esenciales	D1	D2
		detergente (Col. 3, líneas 17-19)

El documento D1 se considera el estado de la técnica cercano a la solicitud definida en la reivindicación 1 porque divulga composiciones que se componen de combinaciones que comprenden una cepa de *Burkholderia sp*. capaz de producir compuestos con actividad pesticida y al menos un vehículo, diluyente, surfactante o adyuvante (Pág. 36, reivindicaciones 1-6). El documento D1 también menciona características de la cepa entre las que se encuentra su actividad plaguicida, capacidad de producción de compuestos plaguicidas, no patogenicidad para animales vertebrados, susceptibilidad a kanamicina, cloranfenicol, ciprofloxacina, piperacilina, imipenem, y una combinación de sulfametoxazol y trimetoprima y contenido de ácidos grasos 16:0, ciclo 17:0, 16:0 3-OH, 14:0, ciclo 19:0 ω8c, 18:0, así como la estructura de los compuestos con actividad plaguicida producidos por dicha cepa (Págs. 37- 38, reivindicación 10) y los métodos para la modulación de infestación por pestes en plantas o semillas (Pág. 36, Reivindicación 7).

La diferencia entre las formulaciones reclamadas de acuerdo a la reivindicación 1 y aquellas descritas el documento D1 es que en las composiciones reclamadas en la presente solicitud incluyen como componente (B) un parabeno C_{1-7}, un alcohol C_{2-17} y un detergente, mientras que en el documento D1 no se hace mención a estos componentes en específico.

El efecto técnico logrado por la inclusión de estos componentes es la obtención de formulaciones pesticidas en las que el principio activo es una cepa aislada de *Burkholderia sp*.

Por lo tanto, el problema técnico objetivo que pretende resolver esta invención se puede formular como la necesidad de proporcionar formulaciones pesticidas en las que el principio activo sea *Burkholderia sp*.

Sin embargo, el uso de parabeno, alcohol y detergente como ingredientes en composiciones pesticidas se había enseñado en el documento D2, el cual se refiere a composiciones pesticidas las cuales comprenden dichos auxiliares de formulación (Col. 3, líneas 17-19).

En consecuencia, la persona del oficio normalmente versada en la materia, incluiría auxiliares de formulación tales como parabeno, alcohol y detergente de acuerdo a lo enseñado en D2, en las composiciones mostradas en D1, llegando así al objeto de las reivindicación 1, por lo que la materia allí reclamada se considera obvia.

Puesto que las reivindicaciones dependientes 2-8 y 13 no mencionan características inventivas adicionales tampoco se pueden considerar inventivas.

Conclusión:

Las reivindicaciones 1 a 8 y13 cumplen el requisito de novedad (Art. 16), pero no cumplen con el requisito de nivel inventivo (Art. 18).

9. Conclusión

Los requisitos de Patentabilidad de la presente solicitud están afectados así:

Ítem	Documento	Reivindicaciones afectadas	Requisito que afecta
D1	US 20110207604	1 – 8 y 13	Nivel inventivo
D2	US 5902595	1 – 8 y 13	Nivel inventivo

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En cumplimiento del artículo 45 de la Decisión 486 de la Comisión de la Comunidad Andina, se le indica que debe dar respuesta dentro del término de sesenta (60) días contados a partir del día siguiente de la fecha de notificación de la presente comunicación. En caso de no dar respuesta al presente requerimiento, o si a pesar de la respuesta subsistieran los impedimentos para la concesión, se denegará la patente.

Se invita al solicitante se sirva indicar, si así lo considera, su renuncia al término faltante de sesenta (60) días para dar respuesta a este requerimiento y presentarla por escrito.

Finalmente, se le recuerda al solicitante que si como respuesta a este requerimiento llegara a modificar el capítulo reivindicatorio y éste contenga más de diez (10) reivindicaciones, no pagará la tasa de modificación voluntaria pero sí la correspondiente al pago por reivindicación adicional.

Notifíquese el presente oficio conforme a lo dispuesto en el numeral 5.2, literal e), del capítulo quinto del título primero de la Circular Única No. 10 de 2001.

JOSÉ LUIS SALAZAR LÓPEZ
Director de Nuevas Creaciones (c)

El anterior requerimiento fue notificado por fijación en lista, de fecha 2015-07-21

Elaboró: Ruth Andrea Rodriguez
Revisó: Jeny Paola Villate Becerra

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INFORME DE BÙSQUEDA DE PATENTES PARA EL No de Radicación: 14-042252-00000-0000	
CRITERIOS PARA LA BÙSQUEDA	
Palabras clave utilizadas	Burkholderia and pesticidal Burkholderia
CLASIFICACIONES INTERNACIONALES UTILIZADAS PARA LA BÚSQUEDA	C12P17/187 C12P17/188

BASES DE DATOS CONSULTADAS.

Espacenet	Google patents	Patbase	Science Direct

INFORMES DE EXÁMENES REALIZADOS EN OTRAS OFICINAS

Oficina	Fecha del examen o de reporte de búsqueda de documentos	Anterioridades encontradas para el examen o reportados en el examen de búsqueda(relacionarlos todos)	Reiv. afectadas	RELEVANCIA (requisito que afecta)	FUERON TENIDOS EN CUENTA PARA EL EXAMEN EN LA OFICINA COLOMBIANA	
					SI	NO
EUROPEA	14/01/15	US2011207604	1 – 13	Nivel inventivo	X	
		US5902595 A				X
		US2008096879				X
		US2004071663				X
		US2003082147				X
		PCR-Based Assay for Differentiation of Pseudomonas aeruginosa from Other Pseudomonas Species Recovered from Cystic Fibrosis Patients				X
		New antitumor substances, fr901463, fr901464 and fr901465 ii. Activities against eperimental tumors in mice and mechanism of action				X
USPTO	07/06/15	WO9856748				X
		"Antifungal Activity of Secretions of Scent Glands from Heteropteran Bugs" Indian Jornal of Experimental Biology, Vol 25, April 198, 233-234				X

DOCUMENTOS ADICIONALES ENCONTRADOS POR EL EXAMINADOR DE ACUERDO A LOS CRITERIOS DE BÙSQUEDA.

US 5902595

BÚSQUEDA DE SECUENCIAS

SEQ ID NO (de la solicitud)	NCBI	The Lens	EMBL-EBI	DDJB	Genome Quest

CRITERIOS DE BÚSQUEDA / UNIDAD DE INVENCIÓN (Pantallazos)

burkholderia pesticidal | Author name | Journal or book title | Volume | Issue | Page | Advanced search

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Chapter 40 - Mammalian Toxicity of Microbial Pest Control Agents
Handbook of Pesticide Toxicology (Second Edition), Volume 1, 2001, Pages 859-871
Andrew L. Rubin
Abstract | PDF (1541 K)

Synthesis and antifungal activity of novel streptochlorin analogues Original Research Article
European Journal of Medicinal Chemistry, Volume 92, 6 March 2015, Pages 776-783
Ming-Zhi Zhang, Qiong Chen, Cai-Hong Xie, Nick Mulholland, Sarah Turner, Dianne Irwin, Yu-Cheng Gu, Guang-Fu Yang, John Clough
Abstract | Graphical abstract | Research highlights | PDF (650 K) | Supplementary content

Chapter 13 - Microbial Pest Control Agents: Use Patterns, Registration Requirements, and Mammalian Toxicity
Hayes' Handbook of Pesticide Toxicology (Third Edition), 2010, Pages 441-461
Andrew L. Rubin
First page PDF | Purchase PDF

Pore worms: Using *Caenorhabditis elegans* to study how bacterial toxins interact with their target host Original Research Article
International Journal of Medical Microbiology, Volume 293, Issues 7–8, 2004, Pages 599-607
Danielle L. Huffman, Larry J. Bischof, Joel S. Griffitts, Raffi V. Aroian
Abstract | PDF (132 K)

Role of allelochemicals in plant growth promoting rhizobacteria for biocontrol of phytopathogens Original Research Article Open Archive
Microbiological Research, Volume 169, Issue 1, 20 January 2014, Pages 18-29
Meenu Saraf, Urja Pandya, Aarti Thakkar
Abstract | PDF (1717 K)

Comparative analysis of the virulence of invertebrate and mammalian pathogenic bacteria in the oral insect infection model *Galleria mellonella* Original Research Article
Journal of Invertebrate Pathology, Volume 103, Issue 1, January 2010, Pages 24-29
S. Fedhila, C. Buisson, O. Dussurget, P. Serror, I.J. Glomski, P. Liehl, D. Lereclus, C. Nielsen-LeRoux
Abstract | PDF (209 K)

Chapter 5 Impact of Pesticides on Soil Microbial Diversity, Enzymes, and Biochemical Reactions Review Article

burkholderia plaguicide

Web Images News Videos More Search tools

Before Aug 27, 2011 Any Patent Office Any filing status Any patent type Sorted by relevance Clear

Isolated bacterial strain of the genus burkholderia and ...

www.google.com.co/patents/US20110207604
App. - Filed 24 Feb 2011 - Published 25 Aug 2011 - Ratnakar Asolkar - Marrone Bio Innovations
A species of **Burkholderia** sp with no known pathogenicity to vertebrates but with ... wherein said second substance is a chemical or biological **pesticide** and (c) ...
Overview - Related - Discuss

Abamectin pesticide residue degrading bacteria and ...

image not available

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App. - Filed 21 Jun 2010 - Published 29 Dec 2010 - 宋瑶 - 南京农业大学
Abamectin **pesticide** residue degrading bacteria and bactericide thereof ... The bacterial strain is AW64, is identified into **Burkholderia** sp. and can utilize ...
Overview - Related - Discuss

Multifunctional engineering strain for degrading ...

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App. - Filed 29 Nov 2010 - Published 25 May 2011 - 任艳 - 山东省科学院中日友好生物技术研究中心
The construction method for the **burkholderia** vietnamiensis multifunctional ... by using the **burkholderia** vietnamiensis, so the function of degrading **pesticide** ...
Overview - Related - Discuss

Bacterium aerobically degrading organic chlorine compounds ...

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App. - Filed 11 May 1999 - Published 25 Nov 1999 - Yuuichi Yoshioka - National Institute For Agro-Environmental Sciences Independent Administr Ative Institute
To soil containing the organic chlorine-based **pesticide** PCNB are added

Ruth Rodriguez

Search history

Search 1: PN=(WO2013032693) (Results 1)

Search 2: [SP]: brief description of the figures [0098] fig. 1 shows the comparison of the growth rate of burkholderia a396 to burkholderia multivorans atcc 17616.[0099] fig. 2 shows the general scheme used to obtain fractions from formulated mbi-206.[0100] fig. 3 shows the general scheme used to obtain fractions and compounds from an mbi-206 culture.[0101] fig. 4 shows insecticidal (sucking) activities of tested compounds against milkweed bugs (oncopeltus fasciatus).[0102] fig. 5 shows insecticidal (feeding) activities of pure compounds against lygus hesperus. (Results 11)

Search 3: [SP]: technical field [0001] provided herein is a species of burkholderia sp with no known pathogenicity to vertebrates, such as mammals, fish and birds but pesticidal activity against plants, algae, insects, fungi, arachnids, such as mites and nematodes and formulations and compositions comprising said species. also provided are natural products, formulations and compositions derived from a culture of said species and methods of controlling algae and arachnids, such as mites, using said burkholderia and/or said natural products. background [0002] natural products are substances produced by microbes, plants, and other organisms. microbial natural products offer an abundant source of chemical diversity, and there is a long history of utilizing natural products for pharmaceutical purposes. one such compound is fr901228 isolated from chromobacterium and has been found to be useful as an antibacterial agent and antitumor agent (see, for example, ueda et al., u.s. pat. no. 7,396,665).[0003] however, secondary metabolites produced by microbes have also been successfully found to have uses for weed and pest control in agricultural applications (see, for example, nakajima et al. 1991 duke et al., 2000 lydon and duke, 1999 gerwick et al., u.s. pat. no. 7,393,812). microbial natural products have been also successfully developed into agricultural insecticides (see, for example, salama et al. 1981 thompson et al., 2000 krieg et al. 1983). sometimes, such natural products have been combined with chemical pesticides (see, for example, gottlieb, u.s. pat. no. 4,808,207). acaricides [0004] acaricides are compounds that kill mites (miticides) and ticks (ixodicides). this class of pesticides is large and includes antibiotics, carbamates, formamidine acaricides, pyrethroids, mite growth regulators, and organophosphate acaricides. besides chemical pesticides, diatomaceous earth and fatty acids can be used to control mites. they typically work through disruption of the cuticle, which dries out the mite. in addition, some essential oils such as peppermint oil, are used to control mites. in spite of the great variety of known acaricide compounds, mites remain a serious problem in agriculture because of the damage they cause to the crops. they can produce several generations during one season, which facilitates rapid development of resistance to the acaricide products used. hence, new pesticide products with new target sites and novel modes of action are critically needed. algicides [0005] algae come in many forms. these include: (1) microscopic, one-celled algae, filamentous algae that resemble hair, algae that grow in sheets and macroalgae that look like plants (2) algae that live inside the outer integument ("skin") or calcium shell of some corals, anemones, and other sessile invertebrates called zooxanthellae (3) very hard-to-remove little dots of green that sometimes grow on aquarium panels which also are not algae, but diatom or radiolarian colonies (microscopic, one-celled, animals with hard shells) with algae incorporated in their matrix.[0006] growth of algae in a small amount of water retained in the container over a significant period of time can be considerable, which is highly undesirable. as a result, algae can cause clogging of filters in water filtration devices, undesirable smells and appearance in pools, exhaustion of dissolved oxygen, and suffocation of fishes and shellfishes to death. in addition to being present in water, algae may also be present in industrial materials which are exposed to the weather and light, such as coatings containing organic film formers on mineral substrates, textile finishes, wood paints and also materials made of plastics.[0007] algae control can be divided into four categories: biological, mechanical, physical and chemical controls. a few pertinent facts hold for all methods of algae control. for example, turbo and astrea snails, some blennies, some tangs, among others are good grazers. snails are the most widely used scavengers, and generally the best choice. some parts of the country seem to favor the use of sea urchins, dwarf angels. the former die too easily and move the decor about, and the latter can be problematical with eating expensive invertebrates. other methods include functional protein skimmers, with or without ozone and ultraviolet sterilizers. these physical filters remove and destroy algae on exposure and help oxidize nutrients as the water is circulated. antibiotics may also be used. however, they treat the symptoms only without dealing with the cause(s) of the algae problem. the factors can contribute to water system being out of balance. copper, usually in the form of copper sulfate solution has been employed as an algicide, as well as a general epizootic parasite preventative. this metal is useful in treatment and quarantine tanks, dips and fish-only arrangements but it is persistent and toxic to all life, especially non-fish.burkholderia [0008] the burkholderia genus, beta -subdivision of the proteobacteria, comprises more than 40 species that inhabit diverse ecological niches (compant et al., 2008). the bacterial species in the genus burkholderia are ubiquitous organisms in soil and rhizosphere (coenye and vandamme, 2003 parke and gurian-sherman, 2001). traditionally, they have been known as plant pathogens, b. cepacia being the first one discovered and identified as the pathogen causing disease in onions (burkholder, 1950). several burkholderia species have developed beneficial interactions with their plant hosts (see, for example, cabballero-mellado et al., 2004, chen et al., 2007). some burkholderia species have also been found to be opportunistic human pathogens (see, for example, cheng and currie, 2005 and nierman et al., 2004). additionally, some burkholderia species have been found to have potential as biocontrol products (see for example, burkhead et al., 1994 knudsen et al., 1987 jansiewicz et al., 1988 gouge et al., us patent application no. 2003/0082147 parke et al., u.s. pat. no. 6,077,505 casida et al., u.s. pat. no. 6,689,357 jeddeloh et al., wo2001055398 zhang et al., u.s. pat. no. 7,141,407). some species of in this genus have been effective in bioremediation to decontaminate polluted soil or groundwater (see, for example, leahy et al. 1996). further, some burkholderia species have been found to secrete a variety of extracellular enzymes with proteolytic, lipolytic and hemolytic activities, as well as toxins, antibiotics, and siderophores (see, for example, ludovic et al., 2007 nagamatsu, 2001).[0009] pct/us2011/026016 discloses a burkholderia species, particularly burkholderia a396 and compounds derived from said species with no known pathogenicity to vertebrates with activity against plants, insects, fungi and nematodes. oxazoles, thiazoles and indoles [0010] oxazoles, thiazoles and indoles are widely distributed in plants, algae, sponges, and microorganisms. a large number of natural products contain one or more of the five-membered oxazole, thiazole and indole nucleus/moieties. these natural products exhibit a broad spectrum of biological activity of demonstrable therapeutic value. for example, bleomycin a (tomohisa et al.), a widely prescribed anticancer drug, effects the oxidative degradation of dna and uses a bithiazole moiety to bind its target dna sequences (vanderwall et al., 1997). bacitracin (ming et al., 2002), a thiazoline-containing peptide antibiotic, interdicts bacterial cell wall new biosynthesis by complexation with c55-bactoprenolpyrophosphate. thiangazole (kunze et al., 1993) contains a tandem array of one oxazole and three thiazolines and exhibits antiviral activity (jansen et al., 1992). yet other oxazole/thiazole-containing natural products such as thiostrepton (anderson et al., 1970) and ge2270a (selva et al., 1997) inhibit translation steps in bacterial protein synthesis. more than 1000 alkaloids with the indole skeleton have been reported from microorganisms. one-third of these compounds are peptides with masses beyond 500 da where the indole is tryptophan derived. the structural variety of the remaining two-thirds is higher, and their biological activity seems to cover a broader range, including antimicrobial, antiviral, cytotoxic, insecticidal, antithrombotic, or enzyme inhibitory activity. brief summary [0011] provided herein is an isolated strain of a non-burkholderia cepacia, non-burkholderia plantari, non-burkholderia gladioli, burkholderia sp. which has the following characteristics: (a) has a 16rrna gene sequence comprising a forward sequences having at least 99.5 percent identity to the sequences set forth in seq id no:8, 11 and 12 and a reverse sequence having at least 99.5 percent identity to seq id no:9, 10, 13-15(b) has pesticidal, in particular, herbicidal, algicidal, acaricidal, insecticidal, fungicidal and nematicidal activity(c) produces at least one of the compounds selected from the group consisting of: (i) a compound having the following properties: (a) a molecular weight of about 525-555 as determined by liquid chromatography/mass spectroscopy (lc/ms) (b) 1h nmr values of 6.22, 5.81, 5.69, 5.66, 5.65, 4.64, 4.31, 3.93, 3.22, 3.21, 3.15, 3.10, 2.69, 2.62, 2.26, 2.23. 1.74, 1.15, 1.12, 1.05, 1.02 (c) has 13c nmr values of 172.99, 172.93, 169.57, 169.23, 167.59, 130.74, 130.12, 129.93, 128.32, 73.49, 62.95, 59.42, 57.73, 38.39, 38.00, 35.49, 30.90, 30.36, 29.26, 18.59, 18.38, 18.09, 17.93, 12.51 and (c) an high pressure liquid chromatography (hplc) retention time of about 10-15 minutes, on a reversed phase c-18 hplc column using a water:acetonitrile (ch3cn) gradient(ii) a compound having an oxazolyl-indole structure comprising at least one indole moiety, at least one oxazole moiety, at least one substituted alkyl group and at least one carboxylic ester group at least 17 carbons and at least 3 oxygen and 2 nitrogens(iii) a compound having an oxazolyl-benzyl structure comprising at least one benzyl moiety, at least one oxazole moiety, at least one substituted alkyl group and at least one amide group at least 15 carbons and at least 2 oxygen and 2 nitrogens(iv) a compound having at least one ester, at least one amide, at least three methylene groups, at least one tetrahydropyranose moiety and at least three olefinic double bonds, at least six methyl groups, at least three hydroxyl groups, at least twenty five carbons and at least eight oxygen and one nitrogen and(d) is non-pathogenic (non-infectious) to vertebrate animals, such as mammals, birds and fish(e) is susceptible to kanamycin, chloramphenicol, ciprofloxacin, piperacillin, imipenem, and a combination of sulphamethoxazole and trimethoprim and(f) contains the fatty acids 16:0, cyclo 17:0, 16:0 3-oh, 14:0, cyclo 19:0 ?8c, 18:0.[0022] in a particular embodiment, the strain has the identifying characteristics of a burkholderia a396 strain (nrrl accession no. b-50319).[0023] in a particular embodiment, the first substance is a supernatant. in yet even a more particular embodiment, the supernatant is a cell-free supernatant.[0024] also provided is a combination, particularly a composition or formulation comprising[0025] (a) a first substance selected from the group consisting of a pure culture, cell fraction or supernatant derived from the burkholderia strain set forth above or extract thereof for use optionally as a pesticide and[0026] (b) optionally at least one of a carrier, diluent, surfactant, adjuvant, or chemical or biological pesticide (e.g., algicide, acaricide, herbicide, fungicide, insecticide, nematocide and particularly, algicide or acaricide (e.g., miticide)). in a related aspect, provided herein is a seed coated with said combination or composition.[0027] in a particular embodiment, the composition or formulation may comprise:[0028] (a) a first substance selected from the group consisting of a pure culture, cell fraction or supernatant derived from the burkholderia strain set forth above or extract thereof for use optionally as a pesticide[0029] (b) fatty acids 16:0, cyclo 17:0, 16:0 3-oh, 14:0, cyclo 19:0 ?8c, 18:0, c1-c7 paraben, c2-c17 alcohol and detergent and[0030] (c) optionally another substance wherein said other substance is a pesticide (e.g., fungicide, insecticide, algicide, acaricide (e.g., miticide), herbicide, nematocide).[0031] in a particular embodiment, the c1-c7 aliphatic paraben is present in the amount of about 0.01-5 percent, the c2-c17 alcohol is present in the amount of about 0.00-10 percent and the detergent is present in the amount of about 0.001-10 percent.[0032] also provided are the pesticidal substances derived from the formulation set forth above, combinations comprising said pesticidal subtances and another chemical or biological pesticide and methods for producing these pesticidal substances. in a particular embodiment, these pesticidal substances comprise at least one of the following characteristics:[0033] (a) has pesticidal properties and in particular, herbicidal, insecticidal, nematicidal, and fungicidal properties[0034] (b) has a molecular weight of about 210-240 and more particularly, 222 as determined by liquid chromatography/mass spectroscopy (lc/ms)[0035] (e) has 1h nmr values of delta 7.90, 6.85, 4.28, 1.76, 1.46, 1.38, 1.37, 0.94[0036] (d) has 13c nmr values of delta 166.84, 162.12, 131.34 (2c), 121.04, 114.83 (2c), 64.32, 31.25, 28.43, 25.45, 22.18. 12.93[0037] (e) has an high pressure liquid chromatography (hplc) retention time of about 15-20 minutes, more specifically about 17 minutes and even more specifically about 17.45 min on a reversed phase c-18 hplc (phenomenex, luna 5 micro c18(2) 100 a, 100x4.60 mm) column using a water:acetonitrile (ch3cn) with a gradient solvent system (0-20 min 90-0 percent aqueous ch3cn, 20-24 min 100 percent ch3cn, 24-27 min 0-90 percent aqueous ch3cn, 27-30 min 90 percent aqueous ch3cn) at 0.5 ml/min flow rate and uv detection of 210 nm[0038] (f) the 13c nmr spectrum exhibited 13 discrete carbon signals which were attributed to one methyl, five methylene carbons, four methines, and three quaternary carbons[0039] (g) has a molecular formula of c13h18o3 which was determined by interpretation of the esims and nmr data analysis[0040] (h) has uv absorption bands between about 210-450 nm and most particularly at about 248 nm.[0041] also provided are compounds having the structure shown below:[ftimg=60402135][0042] wherein[0043] x, is independently -o, -nr, or -s, wherein r is h or c1-c10 alkyl r1, r2, r3, r4, r5, and r6 are each independently h, alkyl, substituted alkyl, alkenyl, substituted alkenyl, alkynyl, substituted alkynyl, aryl, substituted aryl, heteroaryl, substituted heteroaryl, heterocyclic, substituted heterocyclic, cycloalkyl, substituted cycloalkyl, alkoxy, substituted alkoxy, thioalkyl, substituted thioalkyl, hydroxy, halogen, amino, amido, carboxyl, -c(o)h, acyl, oxyacyl, carbamate, sulfonyl, sulfonamide, or sulfuryl.[0044] in particular, the substance may have the structure[ftimg=60402136][0045] wherein[0046] x, is independently -o, -nr, or -s, wherein r is h or c1-c10 alkyl r1, r2, r3, r4, r5, and r6 are each independently h, alkyl, substituted alkyl, alkenyl, substituted alkenyl, alkynyl, substituted alkynyl, aryl, substituted aryl, heteroaryl, substituted heteroaryl, heterocyclic, substituted heterocyclic, cycloalkyl,

substituted cycloalkyl, alkoxy, substituted alkoxy, thioalkyl, substituted thioalkyl, hydroxy, halogen, amino, amido, carboxyl, -c(o)h, acyl, oxyacyl, carbamate, sulfonyl, sulfonamide, or sulfuryl.[0047] in a more particular embodiment, the compound is butyl parben with the following structure:[ftimg=60402137][0048] in a more particular embodiment, the compound is hexyl parben with the following structure:[ftimg=60402138][0049] in a more particular embodiment, the compound is octyl parben with the following structure:[ftimg=60402139][0050] the pesticidal substance(s) derived from the formulation set forth above may obtained by [0051] (a) providing the formulation set forth above[0052] (b) incubating or storing the formulation provided for a sufficient time (e.g., between about 1 day to about 6 months) and at a sufficient temperature (e.g., between about 3c to about 50 c) to produce the pesticidal substance(s) and[0053] (c) isolating the pesticidal substance.[0054] in a related aspect, disclosed is a method for modulating proliferation and/or growth of a pest including but not limited to insect, fungi, weeds, nematode, arachnid, algae and particularly, algae, arachnid (e.g., mites. ticks) comprising applying to a location where modulation of proliferation and/or growth of a pest is desired an amount of:[0055] (i)(a) at least one or more substances selected from the group consisting of a substantially pure cell culture, cell fraction, supernatant derived from the burkholderia strain set forth above or extract thereof and (b) optionally another substance, wherein said substance is a pesticide, or[0056] (ii) the combination, composition or formulation or pesticidal substances derived from said formulation set forth above, effective to modulate proliferation and/or growth of a pest at said location.[0057] disclosed herein are isolated compounds which are optionally obtainable or derived from burkholderia species, or alternatively, organisms capable of producing these compounds that can be used to control various pests, particularly plant phytopathogenic pests, examples of which include but are not limited to insects, nematodes, bacteria, fungi. these compounds may also be used as herbicides, acaricides or algicides. [0058] in particular, the isolated pesticidal compounds may include but are not limited to:[0059] (a) a compound having the following properties: (i) a molecular weight of about 525-555 as determined by liquid chromatography/mass spectroscopy (lc/ms) (ii) 41 nmr values of 6.22, 5.81, 5.69, 5.66, 5.65, 4.64, 4.31, 3.93, 3.22, 3.21, 3.15, 3.10, 2.69, 2.62, 2.26, 2.23. 1.74, 1.15, 1.12, 1.05, 1.02 (iii) has 13c nmr values of 172.99, 172.93, 169.57, 169.23, 167.59, 130.74, 130.12, 129.93, 128.32, 73.49, 62.95, 59.42, 57.73, 38.39, 38.00, 35.49, 30.90, 30.36, 29.26, 18.59, 18.38, 18.09, 17.93, 12.51 and (iv) an high pressure liquid chromatography (hplc) retention time of about 10-15 minutes, on a reversed phase c-18 hplc column using a water:acetonitrile (ch3cn) gradient[0060] (b) a compound having an oxazolyl-indole structure comprising at least one indole moiety, at least one oxazole moiety, at least one substituted alkyl group and at least one carboxylic ester group at least 17 carbons and at least 3 oxygen and 2 nitrogens[0061] (c) a compound having an oxazolyl-benzyl structure comprising at least one benzyl moiety, at least one oxazole moiety, at least one substituted alkyl group and at least one amide group at least 15 carbons and at least 2 oxygen and 2 nitrogens[0062] (d) a compound having at least one ester, at least one amide, at least three methylene groups, at least one tetrahydropyranose moiety and at least three olefinic double bonds, at least six methyl groups, at least three hydroxyl groups, at least twenty five carbons and at least eight oxygen and one nitrogen and[0063] (e) a compound having at least one ester, at least one amide, an epoxide methylene group, at least one tetrahydropyranose moiety, at least three olefinic double bonds, at least six methyl groups, at least three hydroxyl groups, at least 25 carbons, at least 8 oxygens and at least 1 nitrogen. [0064] in a particular embodiment, the isolated compounds may include but are not limited to:[0065] (a) a compound having an oxazolyl-indole structure comprising at least one indole moiety, at least one oxazole moiety, at least one substituted alkyl group, at least one carboxylic ester group, at least 17 carbons, at least 3 oxygens and at least 2 nitrogens and which has at least one of the following: (i) a molecular weight of about 275-435 (ii) 1h nmr delta values at 8.44, 8.74, 8.19, 7.47, 7.31, 3.98, 2.82, 2.33, 1.08 (iii) 13c nmr values of delta 163.7, 161.2, 154.8, 136.1, 129.4, 125.4, 123.5, 123.3, 121.8, 121.5, 111.8, 104.7, 52.2, 37.3, 28.1, 22.7, 22.7 (iv) an high pressure liquid chromatography (hplc) retention time of about 10-20 minutes on a reversed phase c-18 hplc column using a water:acetonitrile (ch3cn) with a gradient solvent system and uv detection of 210 nm (v) uv absorption bands at about 226, 275, 327 nm.[0066] (b) a compound having an oxazolyl-benzyl structure comprising at least one benzyl moiety, at least one oxazole moiety, at least one substituted alkyl group and at least one amide group at least 15 carbons and at least 2 oxygens, at least 2 nitrogens and at least one of the following characteristics: (i) a molecular weight of about 240-290 as determined by liquid chromatography/mass spectroscopy (lc/ms) (ii) 1h nmr delta values at about 7.08, 7.06, 6.75, 3.75, 2.56, 2.15, 0.93, 0.93 (iii) 13c nmr values of delta 158.2, 156.3, 155.5, 132.6, 129.5, 129.5, 127.3, 121.8, 115.2, 115.2, 41.2, 35.3, 26.7, 21.5, 21.5 (iv) a high pressure liquid chromatography (hplc) retention time of about 6-15 minutes, on a reversed phase c-18 hplc column using a water:acetonitrile (ch3cn) gradient and (v) uv absorption bands at about 230, 285, 323 nm[0067] (c) a non-epoxide compound comprising at least one ester, at least one amide, at least three methylene groups, at least one tetrahydropyranose moiety and at least three olefinic double bonds, at least six methyl groups, at least three hydroxyl groups, at least twenty five carbons, at least eight oxygens and one nitrogen and at least one of the following characteristics: (i) a molecular weight of about 530-580 as determined by liquid chromatography/mass spectroscopy (lc/ms) (ii) 1h nmr values of delta 6.40, 6.39, 6.00, 5.97, 5.67, 5.54, 4.33, 3.77, 3.73, 3.70, 3.59, 3.47, 3.41, 2.44, 2.35, 2.26, 1.97, 1.81, 1.76, 1.42, 1.37, 1.16, 1.12, 1.04 (iii) 13c nmr values of delta 173.92, 166.06, 145.06, 138.76, 135.71, 129.99, 126.20, 123.35, 99.75, 82.20, 78.22, 76.69, 71.23, 70.79, 70.48, 69.84, 60.98, 48.84, 36.89, 33.09, 30.63, 28.55, 25.88, 20.37, 18.11, 14.90, 12.81, 9.41 (iv) a high pressure liquid chromatography (hplc) retention time of about 7-12 minutes, on a reversed phase c-18 hplc column using a water:acetonitrile (ch3cn) with a gradient solvent system and uv detection of 210 nm (v) a molecular formula of c28h45no10 which was determined by interpretation of the esims and nmr data analysis (vi) uv absorption bands between about 210-450 nm[0068] (d) a compound comprising (i) at least one ester, at least one amide, an epoxide methylene group, at least one tetrahydropyranose moiety and at least three olefinic double bonds, at least six methyl groups, at least three hydroxyl groups, at least 25 carbons, at least 8 oxygens and at least 1 nitrogen, (ii) 13c nmr values of delta174.03, 166.12, 143.63, 137.50, 134.39, 128.70, 126.68, 124.41, 98.09, 80.75, 76.84, 75.23, 69.87, 69.08, 68.69, 68.60, 48.83, 41.07, 35.45, 31.67, 29.19, 27.12, 24.55, 19.20, 18.95, 13.48, 11.39, 8.04, (iii) a molecular formula of c28h43no9 and at least one of: (a) 1h nmr 6 values at about 6.41, 6.40, 6.01, 5.97, 5.67, 5.55, 4.33, 3.77, 3.75, 3.72, 3.64, 3.59, 3.54, 3.52, 2.44, 2.34, 2.25, 1.96, 1.81, 1.76, 1.42, 1.38, 1.17, 1.12, 1.04 (b) an high pressure liquid chromatography (hplc) retention time of about 6-15 minutes, on a reversed phase c-18 hplc column using a water:acetonitrile (ch3cn) gradient (c) uv absorption band between about 210-450 nm and most particularly at about 234 nm.[0069] in a more particular embodiment, provided are compounds including but not limited to:[0070] (a) a compound having the structure ##str001##[ftimg=60402140] or a pesticidally acceptable salt or steriosomers thereof, wherein m is 1, 2, 3 or 4 n is 0, 1, 2, or 3 p and q are independently 1 or 2 x is o, nh or nr r1, r2 and r3 are the same or different and independently an amino acid side-chain moiety or an amino acid side-chain derivative and r is a lower chain alkyl, aryl or arylalkyl moiety[0071] (b) a compound having the structure ##str002##[ftimg=60402141] wherein x, y and z are each independently -o, -nr1, or -s, wherein r1 is -h or c1-c10 alkyl r1, r2 and m are each independently-h, alkyl, substituted alkyl, alkenyl, substituted alkenyl, alkynyl, substituted alkynyl, aryl, substituted aryl, heteroaryl, substituted heteroaryl, heterocyclic, substituted heterocyclic, cycloalkyl, substituted cycloalkyl, alkoxy, substituted alkoxy, thioalkyl, substituted thioalkyl, hydroxy, halogen, amino, amido, carboxyl, -c(o)h, acyl, oxyacyl, carbamate, sulfonyl, sulfonamide, or sulfuryl and "m" may be located anywhere on the oxazole ring[0072] (c) a compound having the structure ##str002a##.[ftimg=60402142] wherein r1 is -h or c1-c10 alkyl r2 is an alkyl ester[0073] (d) a compound having the structure ##str003##[ftimg=60402143] wherein: x and y are each independently -oh, -nr1, or -s, wherein r1 is -h or c1-c10 alkyl r1, r2 and m, a substituent on the oxazole ring, are each independently -h, alkyl, substituted alkyl, alkenyl, substituted alkenyl, alkynyl, substituted alkynyl, aryl, substituted aryl, heteroaryl, substituted heteroaryl, heterocyclic, substituted heterocyclic, cycloalkyl, substituted cycloalkyl, alkoxy, substituted alkoxy, thioalkyl, substituted thioalkyl, hydroxy, halogen, amino, amido, carboxyl, -c(o)h, acyl, oxyacyl, carbamate, sulfonyl, sulfonamide, or sulfuryl.[0074] (e) a compound having the structure ##str003a##[ftimg=60402144] wherein r1 is -h or c1-c10 alkyl[0075] (f) a compound having the structure ##str004a##[ftimg=60402145] wherein x, y and z are each independently -o, -nr, or -s, wherein r is h or c1-c10 alkyl r1, r2, r3, r4, r5, r6, r7, r8, r9, r10, r11, r12, and r13 are each independently h, alkyl, substituted alkyl, alkenyl, substituted alkenyl, alkynyl, substituted alkynyl, aryl, substituted aryl, heteroaryl, substituted heteroaryl, heterocyclic, substituted heterocyclic, cycloalkyl, substituted cycloalkyl, alkoxy, substituted alkoxy, thioalkyl, substituted thioalkyl, hydroxy, halogen, amino, amido, carboxyl, -c(o)h, acyl, oxyacyl, carbamate, sulfonyl, sulfonamide, or sulfuryl.[0076] (g) a compound having the structure ##str004b##[ftimg=60402146] wherein r1, r2, r3, r4, r5, r6, r7, r8, r9, r10, r11, r12, and r13 are each independently h, alkyl, substituted alkyl, alkenyl, substituted alkenyl, alkynyl, substituted alkynyl, aryl, substituted aryl, heteroaryl, substituted heteroaryl, heterocyclic, substituted heterocyclic, cycloalkyl, substituted cycloalkyl, alkoxy, substituted alkoxy, thioalkyl, substituted thioalkyl, hydroxy, halogen, amino, amido, carboxyl, -c(o)h, acyl, oxyacyl, carbamate, sulfonyl, sulfonamide, or sulfuryl[0077] (h) a compound having the structure ##str004c##[ftimg=60402147] wherein r1, r2, r3, r4, r5, r6, r7, r8, r11, are each independently h, alkyl, substituted alkyl, alkenyl, substituted alkenyl, alkynyl, substituted alkynyl, aryl, substituted aryl, heteroaryl, substituted heteroaryl, heterocyclic, substituted heterocyclic, cycloalkyl, substituted cycloalkyl, alkoxy, substituted alkoxy, thioalkyl, substituted thioalkyl, hydroxy, halogen, amino, amido, carboxyl, -c(o)h, acyl, oxyacyl, carbamate, sulfonyl, sulfonamide, or sulfuryl[0078] (i) a compound having the structure ##str005##[ftimg=60402148] wherein x and y are each independently -oh, -nr1, or -s, wherein r1, r2 are each independently -h, alkyl (e.g., c1-c10 alkyl), substituted alkyl, alkenyl, substituted alkenyl, alkynyl, substituted alkynyl, aryl, substituted aryl, heteroaryl, substituted heteroaryl, heterocyclic, substituted heterocyclic, cycloalkyl, substituted cycloalkyl, alkoxy, substituted alkoxy, thioalkyl, substituted thioalkyl, hydroxy, halogen, amino, amido, carboxyl, -c(o)h, acyl, oxyacyl, carbamate, sulfonyl, sulfonamide, or sulfuryl[0079] (j) a compound having the structure ##str006a##[ftimg=60402149] wherein x, y and z are each independently -o, -nr, or -s, wherein r is h or c1-c10 alkyl r1, r2, r3, r4, r5, r6, r7, r8, r11, r12, and r13 are each independently h, alkyl, substituted alkyl, alkenyl, substituted alkenyl, alkynyl, substituted alkynyl, aryl, substituted aryl, heteroaryl, substituted heteroaryl, heterocyclic, substituted heterocyclic, cycloalkyl, substituted cycloalkyl, alkoxy, substituted alkoxy, thioalkyl, substituted thioalkyl, hydroxy, halogen, amino, amido, carboxyl, -c(o)h, acyl, oxyacyl, carbamate, sulfonyl, sulfonamide, or sulfuryl.[0080] in a most particular embodiment, the compounds may include but are not limited to[0081] (i) templazole a[0082] (ii) templazole b[0083] (iii) templamide a[0084] (iv) templamide b[0085] (v) fr901228[ftimg=60402150][ftimg=60402151][ftimg=60402152][ftimg=60402153][0086] (xl) fr901465[0087] (xli) f8h17, an active compound from fraction f8, which has been assigned a molecular weight of 1080 based on the molecular ion peak at 1081.75 (m+h) in positive esi mode and further confirmed by the negative esims with base peak at 1079.92. this compound showed uv absorption at 234 nm.[0088] in a related aspect, disclosed is a method for modulating proliferation and/or growth of a pest (e.g., algae, arachnid, nematode, insect, fungus) comprising applying to a location where modulation of proliferation and/or growth of a pest (e.g., algae, arachnid, nematode, insect, fungus) is desired an amount of (i) (a) the isolated compounds set forth above and (b) optionally another substance, wherein said substance is an algicide or(ii) the composition or combination set forth above in an amount effective to modulate proliferation and/or growth of pest at said location. [0091] in another related aspect, disclosed is a method for modulating proliferation and/or growth of algae and/or modulating pest infestation in a plant and/or a method for modulating emergence and/or growth of monocotyledonous, sedge or dicotyledonous weeds comprising applying to a location where modulation of proliferation and/or growth of algae and/or modulation of infestation of an arachnid and/or modulation of emergence and/or growth of said weed is desired an amount of[0092] (a) the formulation set forth above or pesticidally effective substance derived therefrom[0093] (b) the combination set forth above[0094] (c) templamide a[0095] (d) templamide b[0096] (e) fr901465[0097] (f) fr901228 effective to modulate said proliferation and/or growth of algae and/or pest infestation and/or emergence or growth of monocotyledonous, sedge or dicotyledonous weeds at said location. the nematode and/or insect infestation is modulated with templamide a, templamide b, fr901465 and/or fr901228. in a more particular embodiment, infestation of insects, specifically oncopeltus sp. (e.g., o. fasciatus) and/or lygus sp. and/or free living nematodes and/or parasitic nematodes (e.g., m. incognita) are modulated. brief description of the figures [0098] fig. 1 shows the comparison of the growth rate of burkholderia a396 to burkholderia multivorans atcc 17616.[0099] fig. 2 shows the general scheme used to obtain fractions from formulated mbi-206.[0100] fig. 3 shows the general scheme used to obtain fractions and compounds from an mbi-206 culture.[0101] fig. 4 shows insecticidal (sucking) activities of tested compounds against milkweed bugs (oncopeltus fasciatus).[0102] fig. 5 shows insecticidal (feeding) activities of pure compounds against lygus hesperus. detailed description of embodiments [0103] while the compositions and methods heretofore are susceptible to various modifications and alternative forms, exemplary embodiments will herein be described in detail. it should be understood, however, that there is no intent to limit the invention to the particular forms disclosed, but on the contrary, the intention is to cover all modifications, equivalents, and alternatives falling within the spirit and scope of the invention as defined by the appended[0104] where a range of values is provided, it is understood that each intervening value, to the tenth of the unit of the lower limit unless the context clearly dictates otherwise, between the upper and lower limit of that range and any other stated or intervening value in that stated range, is included therein. smaller ranges are also included. the upper and lower limits of these smaller ranges are also included therein, subject to any specifically excluded limit in the stated range.[0105] unless defined otherwise, all technical and scientific terms used herein have the same meaning as commonly understood by one of ordinary skill in the art to which this invention belongs. although any methods and materials similar or equivalent to those described herein can also be used in the practice or testing of the present invention, the preferred methods and materials are now described.[0106] it must be noted that as used herein and in the appended claims, the singular forms "a," "and" and "the" include plural references unless the context clearly dictates otherwise.[0107] as defined herein, "derived from" means directly isolated or obtained from a particular source or alternatively having identifying characteristics of a substance or organism isolated or obtained from a particular source.[0108] as defined herein, an "isolated compound" is essentially free of other compounds or substances, e.g., at least about 20 percent pure, preferably at least about 40 percent pure, more preferably about 60 percent pure, even more preferably about 80 percent pure, most preferably about 90 percent pure, and even most preferably about 95 percent pure, as determined by analytical methods, including but not limited to chromatographic methods, electrophoretic methods.[0109] as used herein, the term "alkyl" refers to a monovalent straight or branched chain hydrocarbon group having from one to about 12 carbon atoms, including methyl, ethyl, n-propyl, isopropyl, n-butyl, isobutyl, tert-butyl, n-hexyl, and the like.[0110] as used herein, "substituted alkyl" refers to alkyl groups further bearing one or more substituents selected from hydroxy, alkoxy, mercapto, cycloalkyl, substituted cycloalkyl, heterocyclic, substituted heterocyclic, aryl, substituted aryl, heteroaryl, substituted heteroaryl, aryloxy, substituted aryloxy, halogen, cyano, nitro, amino, amido, -c(o)h, acyl, oxyacyl, carboxyl, sulfonyl, sulfonamide, sulfuryl, and the like.[0111] as used herein, "alkenyl" refers to straight or branched chain hydrocarbyl groups having one or more carbon-carbon double bonds, and having in the range of about 2 up to 12 carbon atoms, and "substituted alkenyl" refers to alkenyl groups further bearing one or

more substituents as set forth above.[0112] as used herein, "alkynyl" refers to straight or branched chain hydrocarbyl groups having at least one carbon-carbon triple bond, and having in the range of about 2 up to 12 carbon atoms, and "substituted alkynyl" refers to alkynyl groups further bearing one or more substituents as set forth above.[0113] as used herein, "aryl" refers to aromatic groups having in the range of 6 up to 14 carbon atoms and "substituted aryl" refers to aryl groups further bearing one or more substituents as set forth above.[0114] as used herein, "heteroaryl" refers to aromatic rings containing one or more heteroatoms (e.g., n, o, s, or the like) as part of the ring structure, and having in the range of 3 up to 14 carbon atoms and "substituted heteroaryl" refers toheteroaryl groups further bearing one or more substituents as set forth above.[0115] as used herein, "alkoxy" refers to the moiety -o-alkyl-, wherein alkyl is as defined above, and "substituted alkoxy" refers to alkoxyl groups further bearing one or more substituents as set forth above.[0116] as used herein, "thioalkyl" refers to the moiety-s-alkyl-, wherein alkyl is as defined above, and "substituted thioalkyl" refers to thioalkyl groups further bearing one or more substituents as set forth above.[0117] as used herein, "cycloalkyl" refers to ring-containing alkyl groups containing in the range of about 3 up to 8 carbon atoms, and "substituted cycloalkyl" refers to cycloalkyl groups further bearing one or more substituents as set forth above.[0118] as used herein, "heterocyclic", refers to cyclic (i.e., ring-containing) groups containing one or more heteroatoms (e.g., n, o, s, or the like) as part of the ring structure, and having in the range of 3 up to 14 carbon atoms and "substituted heterocyclic" refers to heterocyclic groups further bearing one or more substituent's as set forth above.[0119] as used herein "algae" refers to any of various chiefly aquatic, eukaryotic, photosynthetic organisms, ranging in size from single-celled forms to the giant kelp. the term may further refer to photosynthetic protists responsible for much of the photosynthesis on earth. as a group, the algae are polyphyletic. accordingly, the term may refer to any protists considered to be algae from the following groups, alveolates, chloraraachniophytes, cryptomonads, euglenids, glaucophytes, haptophytes, red algae such as rhodophyta, stramenopiles, and viridaeplantae. the term refers to the green, yellow-green, brown, and red algae in the eukaryotes. the term may also refer to the cyanobacteria in the prokaryotes. the term also refers to green algae, blue algae, and red algae.[0120] as used herein "algicide" refers to one or more agents, compounds and/or compositions having algaestatic and/or algaecidal activity.[0121] as used herein "algicidal" as used herein means the killing of algae.[0122] as used herein "algistatic" as used herein means inhibiting the growth of algae, which can be reversible under certain conditions. the burkholderia strain [0123] the burkholderia strain set forth herein is a non-burkholderia cepacia complex, non-burkholderia plantari, non-burkholderia gladioli, burkholderia sp and non-pathogenic to vertebrates, such as birds, mammals and fish. this strain may be isolated from a soil sample using procedures known in the art and described by lorch et al., 1995. the burkholderia strain may be isolated from many different types of soil or growth medium. the sample is then plated on potato dextrose agar (pda). the bacteria are gram negative, and it forms round, opaque cream-colored colonies that change to pink and pinkish-brown in color and mucoid or slimy over time.[0124] colonies are isolated from the potato dextrose agar plates and screened for those that have biological, genetic, biochemical and/or enzymatic characteristics of the burkholderia strain of the present invention set forth in the examples below. in particular, the burkholderia strain has a 16s rrna gene comprising a forward sequence that is at least about 99.5 percent, more preferably about 99.9 percent and most preferably about 100 percent identical to the sequence set forth in seq id no: 8, 11 and 12 and a forward sequence that is at least about 99.5 percent, more preferably about 99.9 percent and most preferably about 100 percent identical to the sequence set forth in seq id no: 9, 10, 13, 14 and 15 as determined by clustal analysis. furthermore, as set forth below, this burkholderia strain may, as set forth below, have pesticidal activity, particularly, virucidal, herbicidal, germicidal, fungicidal, nematicidal, bactericidal and insecticidal and more particularly, herbicidal, algicidal, acaricidal, insecticidal, fungicidal and nematicidal activity. it is not pathogenic to vertebrate animals, such as mammals, birds, and fish.[0125] additionally, the burkholderia strain produces at least the pesticidal compounds set forth in the instant disclosure.[0126] the burkholderia strain is susceptible to kanamycin, chloramphenicol, ciprofloxacin, piperacillin, imipenem, and a combination of sulphamethoxazole and trimethoprim and contains the fatty acids 16:0, cyclo 17:0, 16:0 3-oh, 14:0, cyclo 19:0, 18:0.[0127] this burkholderia strain may be obtained by culturing a microorganism having the identifying characteristics of burkholderia a396 (nrrl accession no. b-50319) on potato dextrose agar (pda) or in a fermentation medium containing defined carbon sources such as glucose, maltose, fructose, galactose, and undefined nitrogen sources such as peptone, tryptone, soytone, and nz amine. algicidal and acaricidal compounds the algicidal and acaricidal compounds disclosed herein may have the following properties: (a) is obtainable from a novel burkholderia species, e.g., a396 (b) is, in particular, toxic to most common agricultural insect pests (c) has a molecular weight of about 525-555 and more particularly, 540 as determined by liquid chromatography/mass spectroscopy (lc/ms) (d) has 1h nmr values of 6.22, 5.81, 5.69, 5.66, 5.65, 4.64, 4.31, 3.93, 3.22, 3.21, 3.15, 3.10, 2.69, 2.62, 2.26, 2.23. 1.74, 1.15, 1.12, 1.05, 1.02 (d) has 13c nmr values of 172.99, 172.93, 169.57, 169.23, 167.59, 130.74, 130.12, 129.93, 128.32, 73.49, 62.95, 59.42, 57.73, 38.39, 38.00, 35.49, 30.90, 30.36, 29.26, 18.59, 18.38, 18.09, 17.93, 12.51 (e) has an high pressure liquid chromatography (hplc) retention time of about 10-15 minutes, more specifically about 12 minutes and even more specifically about 12.14 min on a reversed phase c-18 hplc (phenomenex, luna 5 micro c18 (2) 100 a, 100x4.60 mm) column using a water:acetonitrile (ch3cn) with a gradient solvent system (0-20 min 90-0 percent aqueous ch3cn, 20-24 min 100 percent ch3cn, 24-27 min, 0-90 percent aqueous ch3cn, 27-30 min 90 percent aqueous ch3cn) at 0.5 ml/min flow rate and uv detection of 210 nm (f) has a molecular formula, c24h36n4o6s2, which is determined by interpretation of 1h, 13c nmr and lc/ms data (g) a 13c nmr spectrum with signals for all 24 carbons, including 5 methyl, 4 methylene, 9 methine, and 6 quaternary carbons and (g) 1h nmr spectrum displaying characteristics of a typical depsipeptide, illustrating three-amino protons [4.63, 4.31, 3.93], and one ester carbinol proton [5.69]. in a particular embodiment, the compound has the structure ##str001##:[ftimg=60402154] or a pesticidally acceptable salt or stereoisomers thereof, wherein m is 1, 2, 3 or 4 n is 0, 1, 2, or 3 p and q are independently 1 or 2 x is o, nh or nr r1, r2 and r3 are the same or different and independently an amino acid side-chain moiety or an amino acid side-chain derivative and r is a lower chain alkyl, aryl or arylalkyl moiety.[0128] in an even more particular embodiment, the compound has the structure of fr901228:[ftimg=60402155][0129] provided herewith are compounds set forth in ##str002##:[ftimg=60402156] wherein: x, y and z are each independently-o, -nr1, or -s, wherein r1 is -h or c1-c10 alkyl r1, r2 and m are each independently-h, alkyl, substituted alkyl, alkenyl, substituted alkenyl, alkynyl, substituted alkynyl, aryl, substituted aryl, heteroaryl, substituted heteroaryl, heterocyclic, substituted heterocyclic, cycloalkyl, substituted cycloalkyl, alkoxy, substituted alkoxy, thioalkyl, substituted thioalkyl, hydroxy, halogen, amino, amido, carboxyl, -c(o)h, acyl, oxyacyl, carbamate, sulfonyl, sulfonamide, or sulfuryl.[0130] in an even another particular embodiment, family ##str002##compounds may be the compounds set forth in (vi)-(xix).[ftimg=60402157][ftimg=60402158][ftimg=60402159][0131] these are from either natural materials or compounds obtained from commercial sources or by chemical synthesis. natural sources of family ##str002##compounds include, but are not limited to, microorganisms, alga, and sponges. in a more particular embodiment, microorganisms which include the family ##str002##compounds include but are not limited to, or alternatively, family ##str002##compounds may be derived from species such as streptoverticillium waksmanii (compound vi) (umehara, et al., 1984), streptomyces pimprina (compound vii) (naik et al., 2001), streptoverticillium olivoreticuli (compounds viii, ix, x) (koyama y., et al., 1981), streptomyces sp (compounds xi, xii) (watabe et al., 1988), pseudomonas syringae (compounds xiii, xiv) (pettit et al., 2002). family ##str002## compounds may also be derived from algae including but not limited to red alga (compound xv) (n'diaye, et al., 1996), red alga martensia fragilis (compound xvi) (takahashi s. et al., 1998), diazona chinensis (compounds xvii and xviii) (lindquist n. et al., 1991), rhodophycota haraldiophyllum sp (compound xix) (guella et al., 1994).[0132] also provided is ##str003##:[ftimg=60402160] wherein: x and y are each independently -oh, -nr1, or -s, wherein r1 is -h or c1-c10 alkyl r1, r2 and m, a substituent on the oxazole ring, are each independently-h, alkyl, substituted alkyl, alkenyl, substituted alkenyl, alkynyl, substituted alkynyl, aryl, substituted aryl, heteroaryl, substituted heteroaryl, heterocyclic, substituted heterocyclic, cycloalkyl, substituted cycloalkyl, alkoxy, substituted alkoxy, thioalkyl, substituted thioalkyl, hydroxy, halogen, amino, amido, carboxyl, -c(o)h, acyl, oxyacyl, carbamate, sulfonyl, sulfonamide, or sulfuryl.[0133] further provided is ##str005##:[ftimg=60402161] wherein x and y are each independently -oh, -nri, or -s, wherein r1, r2 are each independently-h, alkyl (e.g., c1-c10 alkyl), substituted alkyl, alkenyl, substituted alkenyl, alkynyl, substituted alkynyl, aryl, substituted aryl, heteroaryl, substituted heteroaryl, heterocyclic, substituted heterocyclic, cycloalkyl, substituted cycloalkyl, alkoxy, substituted alkoxy, thioalkyl, substituted thioalkyl, hydroxy, halogen, amino, amido, carboxyl, -c(o)h, acyl, oxyacyl, carbamate, sulfonyl, sulfonamide, or sulfuryl.[0134] in a particular embodiment, family ##str005## compounds such as compounds from xx-xxiii set forth below may be derived from natural or commercial sources or by chemical synthesis.[ftimg=60402162][0135] natural sources of family ##str005##compounds include, but are not limited to plants, corals, microorganisms, and sponges. the microorganisms include, but are not limited to streptomyces griseus (compound xx) (hirota et al., 1978), streptomyces albus (compound xxi) (werner et al., 1980). family str004 compounds may also be derived from algae including but not limited to haraldiophyllum sp (compound xxii (guella et al., 2006), and red algae (compound xxiii) (n'diaye et al., 1994).[0136] in one embodiment, the compound may be derived from or is obtainable from a microorganism, and in particular from burkholderia species and characterized as having a structure comprising at least one ester, at least one amide, at least three methylene groups, at least one tetrahydropyranose moiety and at least three olefinic double bonds, at least six methyl groups, at least three hydroxyl groups, at least twenty five carbons and at least eight oxygen and one nitrogen. the compound further comprises at least one of the following characteristics:[0137] (a) pesticidal properties and in particular, nematicidal, fungicidal, insecticidal, acaricidal, algicidal and herbicidal properties[0138] (b) a molecular weight of about 530-580 and more particularly, 555 as determined by liquid chromatography/mass spectroscopy (lc/ms)[0139] (c) 1h nmr values of delta 6.40, 6.39, 6.00, 5.97, 5.67, 5.54, 4.33, 3.77, 3.73, 3.70, 3.59, 3.47, 3.41, 2.44, 2.35, 2.26, 1.97, 1.81, 1.76, 1.42, 1.37, 1.16, 1.12, 1.04[0140] (d) 13c nmr values of delta 173.92, 166.06, 145.06, 138.76, 135.71, 129.99, 126.20, 123.35, 99.75, 82.20, 78.22, 76.69, 71.23, 70.79, 70.48, 69.84, 60.98, 48.84, 36.89, 33.09, 30.63, 28.55, 25.88, 20.37, 18.11, 14.90, 12.81, 9.41[0141] (e) an high pressure liquid chromatography (hplc) retention time of about 7-12 minutes, more specifically about 10 minutes and even more specifically about 10.98 min on a reversed phase c-18 hplc (phenomenex, luna 5 micro c18(2) 100 a, 100x4.60 mm) column using a water:acetonitrile (ch3cn) with a gradient solvent system (0-20 min 90-0 percent aqueous ch3cn, 20-24 min 100 percent ch3cn, 24-27 min 0-90 percent aqueous ch3cn, 27-30 min 90 percent aqueous ch3cn) at 0.5 ml/min flow rate and uv detection of 210 nm[0142] (f) 13c nmr spectrum which exhibits 28 discrete carbon signals which may be attributed to six methyls, four methylene carbons, and thirteen methines including five sp2, four quaternary carbons[0143] (g) a molecular formula of c28h45no10 which was determined by interpretation of the esims and nmr data analysis[0144] (h) uv absorption bands between about 210-450 nm and most particularly at about 234 nm.[0145] also provided are compounds having the structure ##str004a##:[ftimg=60402163] wherein x, y and z are each independently -o, -nr, or -s, wherein r is h or c1-c10 alkyl r1, r2, r3, r4, r5, r6, r7, r8, r9, r10, r11, r12, and r13 are each independently h, alkyl, substituted alkyl, alkenyl, substituted alkenyl, alkynyl, substituted alkynyl, aryl, substituted aryl, heteroaryl, substituted heteroaryl, heterocyclic, substituted heterocyclic, cycloalkyl, substituted cycloalkyl, alkoxy, substituted alkoxy, thioalkyl, substituted thioalkyl, hydroxy, halogen, amino, amido, carboxyl, -c(o)h, acyl, oxyacyl, carbamate, sulfonyl, sulfonamide, or sulfuryl.[0146] in a particular embodiment, the compound has the structure set forth in ##str004b##:[ftimg=60402164] wherein r1, r2, r3, r4, r5, r6, r7, r8, r9, r10, r11, r12, and r13 are as previously defined for ##str004a##.[0147] in a more particular embodiment, the compound is templamide a with the following structure:[ftimg=60402165] in another embodiment, provided is a compound having formula ##str004c##:[ftimg=60402166] wherein r1, r2, r3, r4, r5, r6, r7, r8, and r11 are as previously defined for ##str004a##.[0148] in another embodiment, provided is a compound which may be derived from burkholderia species and characterized as having a structure comprising at least one ester, at least one amide, an epoxide methylene group, at least one tetrahydropyranose moiety and at least three olefinic double bonds, at least six methyl groups, at least three hydroxyl groups, at least 25 carbons and at least 8 oxygen and 1 nitrogen, and pesticide activity. the compound further comprises at least one of the following characteristics:[0149] (a) pesticidal properties and in particular, insecticidal, fungicidal, nematocidal, acaricidal, algicidal and herbicidal properties[0150] (b) a molecular weight of about 520-560 and particularly 537 as determined by liquid chromatography/mass spectroscopy (lc/ms)[0151] (c) 1h nmr delta values at about 6.41, 6.40, 6.01, 5.97, 5.67, 5.55, 4.33, 3.77, 3.75, 3.72, 3.64, 3.59, 3.54, 3.52, 2.44, 2.34, 2.25, 1.96, 1.81, 1.76, 1.42, 1.38, 1.17, 1.12, 1.04[0152] (d) 13c nmr values of delta 174.03, 166.12, 143.63, 137.50, 134.39, 128.70, 126.68, 124.41, 98.09, 80.75, 76.84, 75.23, 69.87, 69.08, 68.69, 68.60, 48.83, 41.07, 35.45, 31.67, 29.19, 27.12, 24.55, 19.20, 18.95, 13.48, 11.39, 8.04[0153] (e) high pressure liquid chromatography (hplc) retention time of about 6-15 minutes, more specifically about 8 minutes on a reversed phase c-18 hplc column using a water:acetonitrile (ch3cn) gradient, particularly, an high pressure liquid chromatography (hplc) retention time of about 8-15 minutes, more specifically about 11 minutes and even more specifically about 11.73 min on a reversed phase c-18 hplc (phenomenex, luna 5 micro c18(2) 100 a, 100x4.60 mm) column using a water:acetonitrile (ch3cn) with a gradient solvent system (0-20 min 90-0 percent aqueous ch3cn, 20-24 min 100 percent ch3cn, 24-27 min 0-90 percent aqueous ch3cn, 27-30 min 90 percent aqueous ch3cn) at 0.5 ml/min flow rate and uv detection of 210 nm[0154] (f) a molecular formula of c28h43no9 which was determined by interpretation of the esims and nmr data analysis[0155] (g) uv absorption bands at about 210-450 nm and most particularly at about 234 nm.[0156] in a particular embodiment, the compound has the structure ##str006a##:[ftimg=60402167] wherein x, y and z are each independently -o, -nr, or -s, wherein r is h or c1-c10 alkyl r1, r2, r3, r4, r5, r6, r7, r8, r11, r12, and r13 are each independently h, alkyl, substituted alkyl, alkenyl, substituted alkenyl, alkynyl, substituted alkynyl, aryl, substituted aryl, heteroaryl, substituted heteroaryl, heterocyclic, substituted heterocyclic, cycloalkyl, substituted cycloalkyl, alkoxy, substituted alkoxy, thioalkyl, substituted thioalkyl, hydroxy, halogen, amino, amido, carboxyl, -c(o)h, acyl, oxyacyl, carbamate, sulfonyl, sulfonamide, or sulfuryl.[0157] in a particular embodiment, the compound has the structure:[ftimg=60402168] in another embodiment, provided is a compound having formula ##str006b##:[ftimg=60402169] wherein r1, r2, r3, r4, r5, r6, r7, r8, and r11 are as previously defined for ##str006a##.[0158] in a more particular embodiment, the compound is templamide b with the following structure:[ftimg=60402170][0159] in yet another particular embodiment, the compound may be derived from burkholderia species and characterized as having a structure comprising at least one ester, at least one amide, an epoxide methylene group, at least one tetrahydropyranose moiety and at least three olefinic double bonds, at least six methyl groups, at least three hydroxyl groups, at least 25 carbons and at least 8 oxygen and at least 1 nitrogen. the compound further comprises at least one of the following characteristics:[0160] (a) pesticidal properties and in particular, insecticidal, fungicidal, acaricidal, nematicidal, algicidal and herbicidal properties[0161] (b) a molecular weight of about 510-550 and particularly about 523 as determined by liquid chromatography/mass spectroscopy (lc/ms)[0162] (c) 1h nmr delta values at about 6.41, 6.40, 6.01, 5.98, 5.68, 5.56, 4.33, 3.77, 3.75, 3.72, 3.65, 3.59, 3.55, 3.50, 2.44, 2.26, 2.04, 1.96, 1.81, 1.75, 1.37, 1.17, 1.04[0163] (d) 13c nmr values of delta 172.22, 167.55, 144.98, 138.94, 135.84, 130.14, 125.85, 123.37, 99.54, 82.19, 78.28, 76.69, 71.31, 70.13, 69.68, 48.83, 42.52, 36.89, 33.11, 30.63, 25.99, 21.20, 20.38, 18.14, 14.93, 12.84[0164] (e)

an high pressure liquid chromatography (hplc) retention time of about 6-15 minutes, more specifically about 8 minutes on a reversed phase c-18 hplc column using a water:acetonitrile (ch3cn) gradient, particularly, an high pressure liquid chromatography (hplc) retention time of about 8-15 minutes, more specifically about 10 minutes and even more specifically about 10.98 min on a reversed phase c-18 hplc (phenomenex, luna 5 micro c18(2) 100 a, 100x4.60 mm) column using a water:acetonitrile (ch3cn) with a gradient solvent system (0-20 min 90-0 percent aqueous ch3cn, 20-24 min 100 percent ch3cn, 24-27 min 0-90 percent aqueous ch3cn, 27-30 min 90 percent aqueous ch3cn) at 0.5 ml/min flow rate and uv detection of 210 nm[0165] (f) a molecular formula of c27h41no9 which was determined by interpretation of the esims and nmr data analysis[0166] (g) uv absorption bands at about 210-450 nm and most particularly at about 234 nm.[0167] in a more particular embodiment, the compound is a known compound fr901465 which was isolated earlier from culture broth of a bacterium of pseudomonas sp. no. 2663 (nakajima et al. 1996) and had been reported to have anticancer activity with the following structure:[ftimg=60402171]in an even another particular embodiment, family ##str006a##compounds may be the compounds set forth in xxiv to xxxix. these are from either natural materials or compounds obtained from commercial sources or by chemical synthesis. natural sources of family ##str006a##compounds include, but are not limited to, microorganisms, alga, and sponges. in a more particular embodiment, microorganisms which include the family ##str006a##compounds which may be derived from species such as pseudomonas sp. no. 2663 (compounds xxiv-xxvi) (nakajima et al., 1996), the synthetic analogues of the fr901464 (xxvii-xxxix) which have been synthesized and patented as anticancer compounds (see koide et al., us patent application no. 2008/0096879 a1).[0169] also provided are the pesticidal compounds produced by the formulation set forth above which comprises at least one of the following characteristics:[0170] (a) has pesticidal properties and in particular, herbicidal, insecticidal, nematicidal, and fungicidal properties[0171] (b) has a molecular weight of about 210-240 and more particularly, 222 as determined by liquid chromatography/mass spectroscopy (lc/ms)[0172] (e) has 1h nmr values of delta 7.90, 6.85, 4.28, 1.76, 1.46, 1.38, 1.37, 0.94[0173] (d) has 13c nmr values of delta 166.84, 162.12, 131.34 (2c), 121.04, 114.83 (2c), 64.32, 31.25, 28.43, 25.45, 22.18. 12.93[0174] (e) has an high pressure liquid chromatography (hplc) retention time of about 15-20 minutes, more specifically about 17 minutes and even more specifically about 17.45 min on a reversed phase c-18 hplc (phenomenex, luna 5p c18(2) 100 a, 100x4.60 mm) column using a water:acetonitrile (ch3cn) with a gradient solvent system (0-20 min 90-0 percent aqueous ch3cn, 20-24 min 100 percent ch3cn, 24-27 min 0-90 percent aqueous ch3cn, 27-30 min 90 percent aqueous ch3cn) at 0.5 ml/min flow rate and uv detection of 210 nm[0175] (f) the 13c nmr spectrum exhibited 13 discrete carbon signals which were attributed to one methyl, five methylene carbons, four methines, and three quaternary carbons[0176] (g) has a molecular formula of c13h18o3 which was determined by interpretation of the esims and nmr data analysis[0177] (h) has uv absorption bands between about 210-450 nm and most particularly at about 248 nm.[0178] also provided are compounds having the structure shown below[ftimg=60402172][0179] wherein x, is independently -o, -nr, or -s, wherein r is h or c1-c10 alkyl r1, r2, r3, r4, r5, and r6 are each independently h, alkyl, substituted alkyl, alkenyl, substituted alkenyl, alkynyl, substituted alkynyl, aryl, substituted aryl, heteroaryl, substituted heteroaryl, heterocyclic, substituted heterocyclic, cycloalkyl, substituted cycloalkyl, alkoxy, substituted alkoxy, thioalkyl, substituted thioalkyl, hydroxy, halogen, amino, amido, carboxyl, -c(o)h, acyl, oxyacyl, carbamate, sulfonyl, sulfonamide, or sulfuryl.[0180] in a more particular embodiment, the compound is butyl parben with the following structure:[ftimg=60402173][0181] in a more particular embodiment, the compound is hexyl parben with the following structure:[ftimg=60402174][0182] in a more particular embodiment, the compound is octyl parben with the following structure:[ftimg=60402175][0183] in yet another embodiment, the compound is f7h18, which has a molecular weight of about 1080. compositions [0184] a substantially pure culture, cell fraction or supernatant and compounds produced by the burkholderia strain disclosed herein, all of which are alternatively referred to as "active ingredient(s)", may be formulated into pesticidal compositions. in a particular embodiment, the supernatant may be a cell-free supernatant.[0185] the active ingredient(s) set forth above can be formulated in any manner. non-limiting formulation examples include but are not limited to emulsifiable concentrates (ec), wettable powders (wp), soluble liquids (sl), aerosols, ultra-low volume concentrate solutions (ulv), soluble powders (sp), microencapsulation, water dispersed granules, flowables (fl), microemulsions (me), nano-emulsions (ne), dusts, emulsions, liquids, flakes etc. in any formulation described herein, percent of the active ingredient is within a range of 0.01 percent to 99.99 percent.[0186] a solid composition can be prepared by suspending a solid carrier in a solution of pesticidal compounds and drying the suspension under mild conditions, such as evaporation at room temperature or vacuum evaporation at 65 degrees centigrade or lower. alternatively, a solid composition may be derived via spray-drying or freeze-drying.[0187] when referring to solid compositions, it should be understood by the artisan of ordinary skill that physical forms such as dusts, beads, powders, particulates, pellets, tablets, agglomerates, granules, floating solids and other known solid formulations are included. the artisan of ordinary skill will be able to readily optimize a particular solid formulation for a given application using methods well known to those of ordinary skill in the art.[0188] the composition may comprise gel-encapsulated compounds derived from the burkholderia strain set forth above. such gel-encapsulated materials can be prepared by mixing a gel-forming agent (e.g., gelatin, cellulose, or lignin) with a solution of algicidal compounds and inducing gel formation of the agent.[0189] the composition may additionally comprise a surfactant to be used for the purpose of emulsification, dispersion, wetting, spreading, integration, disintegration control, stabilization of active ingredients, and improvement of fluidity or rust inhibition. in a particular embodiment, the surfactant is a non-phytotoxic non-ionic surfactant which preferably belongs to epa list 4b. in another particular embodiment, the nonionic surfactant is polyoxyethylene (20) monolaurate. the concentration of surfactants may range between 0.1-35 percent of the total formulation, preferred range is 5-25 percent. the choice of dispersing and emulsifying agents, such as non-ionic, anionic, amphoteric and cationic dispersing and emulsifying agents, and the amount employed is determined by the nature of the composition and the ability of the agent to facilitate the dispersion of these compositions.[0190] in order to provide compositions containing the active ingredient(s) set forth above in the form of dusts, granules, water dispersible powders, aqueous dispersions, or emulsions and dispersions in organic liquids, the carrier or diluent agent in such compositions may be a finely divided solid, an organic liquid, water, a wetting agent, a dispersing agent, humidifying agent, or emulsifying agent, or any suitable combination of these. generally, when liquids and wettable powders are prepared, a conditioning agent comprising one or more surface-active agents or surfactants is present in amounts sufficient to render a given composition containing the active material, the microorganism, dispersible in water or oil.[0191] since these compositions can be applied as a spray utilizing a liquid carrier, it is contemplated that a wide variety of liquid carriers such as, for example, water, organic solvents, decane, dodecane, oils, vegetable oil, mineral oil, alcohol, glycol, polyethylene glycol, agents that result in a differential distribution of pathogenic bacterium in water being treated. combinations thereof and other known to artisan of ordinary skill can be used.[0192] the present compositions can also include other substances which are not detrimental to the active ingredient(s) such as adjuvants, surfactants, binders, stabilizers and the like, which are commonly used in algicides, either singly or in combination as needed.[0193] it will be understood by the artisan of ordinary skill that various additives or agents that predispose pests susceptible to the active ingredient set forth above are added to enhance its pesticidal action. by the phrase "additive that enhances the pesticidal action of the active ingredient" is meant any compound, solvent, reagent, substance, or agent that increases the effect of the active ingredient toward pests and more particularly, mites as compared to the pesticidal effect of the active ingredient in the absence of said additive. in some embodiments, these additives will increase the susceptibility of a particular pest to the active ingredient. additional additives include but are not limited to agents which weaken the biological defenses of susceptible pests. such agents can include salts, such as nacl and cacl2.[0194] the composition may further comprise another microorganism and/or pesticide (e.g, nematocide, fungicide, insecticide, herbicide, algicide, aracicide). the microorganism may include but is not limited to an agent derived from bacillus sp., pseudomonas sp., brevabacillus sp., lecanicillium sp., non-ampelomyces sp., pseudozyma sp., streptomyces sp, burkholderia sp, trichoderma sp, gliocladium sp. alternatively, the agent may be a natural oil or oil-product having fungicidal, herbicidal, aracidal, algicidal, nematocidal and/or insecticidal activity (e.g., paraffinic oil, tea tree oil, lemongrass oil, clove oil, cinnamon oil, citrus oil, rosemary oil).[0195] the composition, in particular, may further comprise an insecticide. the insecticide may include but is not limited to avermectin, bacillus thuringiensis, neem oil and azadiractin, spinosads, chromobacterium subtsugae, eucalyptus extract, entomopathogenic bacterium or fungi such a beauveria bassiana, and metarrhizium anisopliae and chemical insecticides including but not limited to organochlorine compounds, organophosphorous compounds, carbamates, pyrethroids, and neonicotinoids.[0196] the composition my further comprise a nematocide. the nematocide may include, but is not limited to chemical nematocides such as fenamiphos, aldicarb, oxamyl, carbofuran, natural product neamticide, avermectin, the fungi paecilomyces lilacinas and muscodor spp., the bacteria bacillus firmus and other bacillus spp. and pasteuria penetrans. [0197] the composition may further comprise a biofungicide such as extract of r. sachalinensis (regalia) or a fungicide. such fungicides include, but are not limited to, a single site anti-fungal agent which may include but is not limited to benzimidazole, a demethylation inhibitor (dmi) (e.g., imidazole, piperazine, pyrimidine, triazole), morpholine, hydroxypyrimidine, anilinopyrimidine, phosphorothiolate, quinone outside inhibitor, quinoline, dicarboximide, carboximide, phenylamide, anilinopyrimidine, phenylpyrrole, aromatic hydrocarbon, cinnamic acid, hydroxyanilide, antibiotic, polyamine, calamine, phthalimide, benzenoid (xylylalanine). in yet a further embodiment, the antifungal agent is a demethylation inhibitor selected from the group consisting of imidazole (e.g., triflumizole), piperazine, pyrimidine and triazole (e.g., bitertanol, myclobutanil, penconazole, propiconazole, triadimefon, bromuconazole, cyproconazole, diniconazole, fenbuconazole, hexaconazole, tebuconazole, tetraconazole, propiconazole).[0198] the antimicrobial agent may also be a multi-site non-inorganic, chemical fungicide selected from the group consisting of a nitrile (e.g., chloronitrile or fludioxonil), quinoxaline, sulphamide, phosphonate, phosphite, dithiocarbamate, chloralkylhios, phenylpyridin-amine, cyano-acetamide oxime.[0199] the compositions may be applied using methods known in the art. specifically, these compositions may be applied to plants or plant parts. plants are to be understood as meaning in the present context all plants and plant populations such as desired and undesired wild plants or crop plants (including naturally occurring crop plants). crop plants can be plants which can be obtained by conventional plant breeding and optimization methods or by biotechnological and genetic engineering methods or by combinations of these methods, including the transgenic plants and including the plant cultivars protectable or not protectable by plant breeders' rights. plant parts are to be understood as meaning all parts and organs of plants above and below the ground, such as shoot, leaf, flower and root, examples which may be mentioned being leaves, needles, stalks, stems, flowers, fruit bodies, fruits, seeds, roots, tubers and rhizomes. the plant parts also include harvested material, and vegetative and generative propagation material, for example cuttings, tubers, rhizomes, offshoots and seeds.[0200] treatment of the plants and plant parts with the compositions set forth above may be carried out directly or by allowing the compositions to act on their surroundings, habitat or storage space by, for example, immersion, spraying, evaporation, fogging, scattering, painting on, injecting. in the case that the composition is applied to a seed, the composition may be applied to the seed as one or more coats prior to planting the seed using one or more coats using methods known in the art.[0201] as noted above, the compositions may be herbicidal compositions. the composition may further comprise one or more herbicides. these may include, but are not limited to, a bioherbicide and/or a chemical herbicide. the bioherbicide may be selected from the group consisting of clove oil, cinnamon oil, lemongrass oil, citrus oil, orange peel oil, tentoxin, cornexistin, aal-toxin, manuka oil, leptospermone, thaxtomin, sarmentine, momilactone b, sorgoleone, ascaulatoxin and ascaulatoxin aglycone. the chemical herbicide may include, but is not limited to, diflufenzopyr and salts thereof, dicamba and salts thereof, topramezone, tembotrione, s-metolachlor, atrazine, mesotrione, primisulfuron-methyl, 2,4-dichlorophenoxyacetic acid, nicosulfuron, thifensulfuron-methyl, asulam, metribuzin, diclofop-methyl, fluazifop, fenoxaprop-p-ethyl, asulam, oxyfluorfen, rimsulfuron, mecoprop, and quinclorac, thiobencarb, clomazone, cyhalofop, propanil, bensulfuron-methyl, penoxsulam, triclopyr, imazethapyr, halosulfuron-methyl, pendimethalin, bispyribac-sodium, carfentrazone ethyl, sodium bentazon/sodium acifluorfen, glyphosate, glufosinate and orthosulfamuron.[0202] herbicidal compositions may be applied in liquid or solid form as pre-emergence or post-emergence formulations.[0203] for pre-emergence dry formulations, the granule size of the carrier is typically 1-2 mm (diameter) but the granules can be either smaller or larger depending on the required ground coverage. granules may comprise porous or non-porous particles.[0204] for post-emergence formulations, the formulation components used may contain smectite clays, attapulgite clays and similar swelling clays, thickeners such as xanthan gums, gum arabic and other polysaccharide thickeners as well as dispersion stabilizers such as nonionic surfactants (for example polyoxyethylene (20) monolaurate).[0205] in a particular embodiment, the composition may comprise in addition to the active ingredient another microorganism and/or algicide and/or acaricide. the microorganism may include but is not limited to an agent derived from bacillus sp., brevibacillus sp., and streptomyces sp.[0206] the compositions may also as set forth above, be algicidal compositions which can further comprise other algicides such as copper sulphate, diquat or thaxtomin a.[0207] the compositions may be acaricidal compositions which can further comprise other acaricides such as antibiotics, carbamates, formamidine acaricides, pyrethroids, mite growth regulators, organophosphate acaricides and diatomaceous earth. uses [0208] the compositions and pesticidal compounds derived from the burkholderia strain set forth herein may be used as pesticides, particularly as insecticides, nematocides, fungicides, algicides, acaricides and herbicides.[0209] specifically, nematodes that may be controlled using the method set forth above include but are not limited to parasitic nematodes such as root-knot, ring, sting, lance, cyst, and lesion nematodes, including but not limited to free living nematodes, meloidogyne, heterodera and globodera spp particularly meloidogyne incognita (root knot nematodes), as well as globodera rostochiensis and globodera pailida (potato cyst nematodes) heterodera glycines (soybean cyst nematode) heterodera schachtii (beet cyst nematode) oligonychus pratensis (banks grass mite) eriophyes cynodoniensis (bermuda grass mite) bryobia praetiosa (clover mite)-and heterodera avenae (cereal cyst nematode).[0210] phytopathogenic insects controlled by the method of the present invention include, but are not limited to, insects from the order[0211] (a) lepidoptera, for example, acleris spp., adoxophyes spp., aegeria spp., agrotis spp., alabama argillaceae, amylois spp., anticarsia gemmatalis, archips spp., argyrotaenia spp., autographa spp., busseola fusca, cadra cautella, carposina nipponensis, chilo spp., choristoneura spp., clysia ambiguella, cnaphalocrocis spp., cnephasia spp., cochylis spp., coleophora spp., crocidolomia binotalis, cryptophlebia leucotreta, cydia spp., diatraea spp., diparopsis castanea, earias spp., ephestia spp., eucosma spp., eupoecilia ambiguella, euproctis spp., euxoa spp., grapholita spp., hedya nubiferana, heliothis spp., hellula undalis, hyphantria cunea, keiferia lycopersicella, leucoptera scitella, lithocollethis spp., lobesia botrana, lymantria spp., lyonetia spp., malacosoma spp., mamestra brassicae, manduca sexta, operophtera spp., ostrinia nubilalis, pammene spp., pandemis spp., panolis flammea, pectinophora gossypiella, phthorimaea operculella, pieris rapae, pieris spp., plutella xylostella, prays spp., scirpophaga spp., sesamia spp., sparganothis spp., spodoptera spp., synanthedon spp., thaumetopoea spp., tortrix spp., trichoplusia ni and yponomeuta spp.[0212] (b) coleoptera, for example, agriotes spp., anthonomus spp., atomaria linearis, chaetocnema tibialis, cosmopolites spp., curculio spp., dermestes spp., diabrotica spp., epilachna spp., eremnus spp., leptinotarsa

decemlineata, lissorhoptrus spp., melolontha spp., orycaephilus spp., otiorhynchus spp., phlyctinus spp., popillia spp., psylliodes spp., rhizopertha spp., scarabeidae, sitophilus spp., sitotroga spp., tenebrio spp., tribolium spp. and trogoderma spp. (c) orthoptera, for example, blatta spp., blattella spp., gryllotalpa spp., leucophaea maderae, locusta spp., periplaneta spp. and schistocerca spp. (d) isoptera, for example, reticulitermes spp. (e) psocoptera, for example, liposcelis spp. (f) anoplura, for example, haematopinus spp., linognathus spp., pediculus spp., pemphigus spp. and phylloxera spp. (g) mallophaga, for example, damalinea spp. and trichodectes spp. (h) thysanoptera, for example, frankliniella spp., hercinotnrips spp., taeniothrips spp., thrips palmi, thrips tabaci and scirtothrips aurantii (i) heteroptera, for example, cimex spp., distantiella theobroma, dysdercus spp., euchistus spp., eurygaster spp., leptocorisa spp., nezara spp., piesma spp., rhodnius spp., sahlbergella singularis, scotinophara spp., oncopeltus spp. lygys spp. and tniatoma spp. (j) homoptera, for example, aleurothrixus floccosus, aleyrodes brassicae, aonidiella spp., aphididae, aphis spp., aspidiotus spp., bemisia tabaci, ceroplaster spp., chrysomphalus conidium, chrysomphalus dictyospermi, coccus hesperidum, empoasca spp., eriosoma larigerum, erythroneura spp., gascardia spp., laodelphax spp., lecanium corni, lepidosaphes spp., macrosiphus spp., myzus spp., nephotettix spp., nilaparvata spp., paratoria spp., pemphigus spp., planococcus spp., pseudaulacaspis spp., pseudococcus spp., psylla spp., pulvinaria aethiopica, quadraspidiotus spp., rhopalosiphum spp., saissetia spp., scaphoideus spp., schizaphis spp., sitobion spp., trialeurodes vaporariorum, trioza erytreae and unaspis citri (k) hymenoptera, for example, acromyrmex, atta spp., cephus spp., diprion spp., diprionidae, gilpinia polytoma, hoplocampa spp., lasius spp., monomorium pharaonis, neodiprion spp., solenopsis spp. and vespa spp. (1) diptera, for example, aedes spp., antherigona soccata, bibio hortulanus, calliphora erythrocephala, ceratitis spp., chrysomyia spp., culex spp., cuterebra spp., dacus spp., drosophila melanogaster, fannia spp., gastrophilus spp., glossina spp., hypoderma spp., hyppobosca spp., liriomyza spp., lucilia spp., melanagromyza spp., musca spp., oestrus spp., orseolia spp., oscinella frit, pegomyia hyoscyami, phorbia spp., rhagoletis pomonella, sciara spp., stomoxys spp., tabanus spp., tannia spp. and tipula spp. (m) siphonaptera, for example, ceratophyllus spp. and xenopsylla cheopis and (n) from the order thysanura, for example, lepisma saccharina. the active ingredients according to the invention may further be used for controlling crucifer flea beetles (phyllotreta spp.), root maggots (delia spp.), cabbage seedpod weevil (ceutorhynchus spp.) and aphids in oil seed crops such as canola (rape), mustard seed, and hybrids thereof, and also rice and maize. in a particular embodiment, the insect may be a member of the spodoptera, more particularly, spodoptera exigua, myzus persicae, plutella xylostella or euschistus sp.[0213] the substances and compositions may also be used to modulate emergence in either a pre-emergent or post-emergent formulation of monocotyledonous. including sedges and grasses, or dicotyledonous weeds. in a particular embodiment, the weeds may include, but not be limited to, chenopodium sp. (e.g. c. album), abutilon sp. (e.g. a. theophrasti), helianthus sp. (e.g. h. annuus), ludwigia sp. (e.g. l. hexapetala), ambrosia sp. (e.g. a. artemesifolia), amaranthus sp, (e.g., a. retroflexus, a. palmeri), convolvulus sp. (e.g. c. arvensis), ipomoeae sp., brassica sp. (e.g. b. kaber), raphanus sp., taraxacum sp. (e.g. t. officinale), centaurea sp. (e.g. c. solstitalis), conyza sp. (e.g. c. bonariensis), cirsium sp. (e.g. c. arvense), lepidium sp., gallium sp., solanum sp. (e.g. s. nigrum), malva (e.g. m. neglecta), cyperus sp. (e.g. c. rotundus), euphorbia sp., trifolium sp. medicago sp., hydrilla sp., azolla sp., digitaria sp. (e.g. d. sanguinalis), setaria sp. (e.g. s. lutescens), cynodon dactylon, bromus sp. (e.g., b. teclorum), poa sp. (e.g. p. annia, p. pratensis), lollium sp. (e.g. l. perenne), sorghum sp. (e.g. s. halepense), arundo donax, festuca sp, (e.g. f. arundinaceae), echinochloa sp. (e.g., e. crus-galli, e. phyllopogon).[0214] the burkholderia strain, compounds and compositions set forth above may also be used as a fungicide. the targeted fungus may be a fusarium sp., botrytis sp., monilinia sp., colletotrichum sp, verticillium sp. microphomina sp., phytophtora sp, mucor sp., podosphaera sp., rhizoctonia sp., peronospora sp., geotrichum sp., phoma, and penicillium. in another most particular embodiment, the bacteria are xanthomonas. [0215] the substance or compositions can be used to control, reduce and or eliminate the growth and proliferation of marine and non-marine micro and macro algae including but not limited to unicellular, multicellular and diatom, red-, green- and bluegreen-algae such as pseudokirchneriella subcapitata, rhizoclonium sp., cladophoera sp., anabaena sp., nostoc sp., hydrodictyon sp., chara sp, microcystis and didymo sp., chlamydomonas sp., scenedesmus sp., oscillatoria sp., volvox sp., navicula sp, oedogonium sp., spirogyra sp., batrichospermum sp., rhodymenia sp., callithamnion sp.,undaria sp., through algaecide and algaestatic activity.[0216] the active ingredient(s) and compositions set forth above may be applied to locations containing algae. these include but are not limited to a body of water such as a pond, lake, stream, river, aquarium, water treatment facility, power plant or a solid surface, such as plastic, concrete, wood, fiberglass, pipes made of iron and polyvinyl chloride, surfaces covered wih coating materials and/or paints. [0217] as noted above, the active ingredient(s) and compositions set forth above may be applied to locations containing arachnids, such as mites, including but not limited to, panonychus sp. such as panonychus citri (citrus red mite), and panonychus ulmi (red spider mite), tetranychus sp. such as tetranychus kanzawi (kanzawa spider mite), tetranychus urticae (2 spotted spider mite), tetranychus pacificus (pacific spider mite), tetranychus turkestanii (strawberry mite) and tetranychus cinnabarinus (carmine spider mite), oligonychus sp. such as oligonychus panicae (avacado brown mite), oligonychus perseae (persea mite), oligonychus pratensis (banks grass mite) and oligonychus coffeae, aculus sp. such as aculus cornatus (peach silver mite), aculus fockeni (plum rust mite) and aculus lycopersici (tomato russet mite), eotetranychus sp. such as eotetranychus wilametti, eotetranychus yumensis (yuma spider mite) and eotetranychus sexmaculatis (6-spotted mite), bryobia rubrioculus (brown mite), epitrimerus pyri (pear rust mite), phytoptus pyri (pear leaf blister mite), acalitis essigi (red berry mite), polyphagotarsonemus latus (broad mite), eriophyes sheldoni (citrus bud mite), brevipalpus lewisi (citrus flat mite), phylocoptruta oleivora (citrus rust mite), petrobia lateens (brown wheat mite), oxyenus maxwelli (olive mite), rhizoglyphus spp., tyrophagus spp., diptacus gigantorhyncus (bigheaded plum mite) and penthaleaa major (winter grain mite), avocado red mite, flat mite, black and red mango spider mite, papaya leaf edgeroller mite, texas citrus mite, european red mite, grape erineum mite (blister mite), pacific spider mite, willamette spider mitepink citrus rust mite.[0218] such locations may include but are not limited to crops that are infested with such mites or other arachnids (e.g., aphenids).[0219] the invention will now be described in greater detail by reference to the following non-limiting examples.examples [0220] the compositions and methods set forth above will be further illustrated in the following, non-limiting examples. the examples are illustrative of various embodiments only and do not limit the claimed invention regarding the materials, conditions, weight ratios, process parameters and the like recited herein. 1. example 1 isolation and identification of the microbe [0221] 1.1 isolation of the microorganism[0222] the microbe is isolated using established techniques know to the art from a soil sample collected under an evergreen tree at the rinnoji temple, nikko, japan. the isolation is done using potato dextrose agar (pda) using a procedure described in detail by lorch et al., 1995. in this procedure, the soil sample is first diluted in sterile water, after which it is plated in a solid agar medium such as potato dextrose agar (pda). the plates are grown at 25 degrees centigrade for five days, after which individual microbial colonies are isolated into separate pda plates. the isolated bacterium is gram negative, and it forms round, opaque cream-colored colonies that change to pink and pinkish-brown in color and mucoid or slimy over time.[0223] 1.2. identification on the microorganism[0224] the microbe is identified based on gene sequencing using universal bacterial primers to amplify the 16s rrna region. the following protocol is used: burkholderia sp. a396 is cultured on potato-dextrose agar plates. growth from a 24 hour-old plate is scraped with a sterile loop and re-suspended in dna extraction buffer. dna is extracted using the mobio ultra clean microbial dna extraction kit. dna extract is checked for quality/quantity by running 5 micro l on a 1 percent agarose gel. pcr reactions are set up as follows: 2 micro l dna extract, 5 micro l pcr buffer, 1 micro l dntps (10 mm each), 1.25 micro l forward primer (27f (seq id no:1), 1.25 micro l reverse primer (907r (seq id no:2)) and 0.25 micro l taq enzyme. the reaction volume is made up to 50 micro l using sterile nuclease-free water. the pcr reaction includes an initial denaturation step at 95 degrees centigrade for 10 minutes, followed by 30 cycles of 94 degrees centigrade /30 sec, 57 degrees centigrade /20 sec, 72 degrees centigrade /30 sec, and a final extension step at 72 degrees centigrade for 10 minutes.[0225] the product's approximate concentration and size is calculated by running a 5 micro l volume on a 1 percent agarose gel and comparing the product band to a mass ladder.[0226] excess primers, dntps and enzyme are removed from the pcr product with the mobio pcr clean up kit. the cleaned pcr product as directly sequenced using primers 27f (same as above), 530f (seq id no:3)), 1114f (seq id no:4)) and 1525r (seq id no:5)), 1100r (seq id no:6)), 519r (seq id no:7).[0227] the 16s rrna gene sequence of strain a396 is compared with the available 16s rrna gene sequences of representatives of the beta -proteobacteria using blast. strain a395 a396 is closely related to members of the burkholderia cepacia complex, with 99 percent or higher similarity to several isolates of burkholderia multivorans, burkholderia vietnamensis, and burkholderia cepacia. a blast search excluding the b. cepacia complex, showed 98 percent similarity to b. plantarii, b. gladioli and burkholderia sp. isolates.[0228] a distance tree of results using the neighbor joining method, showed that a396 is related to burkholderia multivorans and other burkholderia cepacia complex isolates. burkholderia plantarii and burkholderia glumae grouped in a separate branch of the tree.[0229] the isolated burkholderia strain was found to contain the following sequences: forward sequence, dna sequence with 27f primer, 815 nucleotides (seq id no:8) reverse sequence, 1453 bp, using primers 1525r, 1100r, 519r (seq id no:9) reverse sequence 824 by using primer 907r (seq id no: 10) forward sequence 1152 by using primer 530f (seq id no:11) forward sequence 1067 by using 1114f primer (seq id no:12) reverse sequence 1223 by using 1525r primer (seq no:13) reverse sequence 1216 by using 1100r primer (seq id no:14) reverse sequence 1194 by using 519r primer (seq id no:15)[0230] 1.3. proof that burkholderia a396 does not belong to burkholderia cepacia complex[0231] 1.3.1 molecular biology work using specific pcr primers[0232] in order to confirm the identification of burkholderia a396 as burkholderia multivorans, additional sequencing of housekeeping genes is performed. burkholderia multivorans is a known member of the burkholderia cepacia complex. efforts are focused on pcr of reca genes, as described by mahenthiralingam et al., 2000. the following primers are used: (a) bcr1 and bcr2 set forth in mahenthiralingam et al., 2000 to confirm b. cepacia complex match and (b) bcrbm1 and bcrbm2 set forth mahenthiralingam et al, 2000 to confirm b. multivorans match. a product-yielding pcr reaction for the first primer set would confirm that the microbe belongs to the b. cepacia complex. a product-yielding pcr reaction for the second primer set would confirm that the microbe is indeed b. multivorans. [0233] no pcr product is obtained for either pair of primers. the performance of the pcr reaction and primers is tested using burkholderia multivorans atcc 17616 (positive control) and pseudomonas fluorescens (negative control). strong bands are observed both for b. multivorans using both sets of primers. no bands are observed for pseudomonas fluorescens. the results indicate that a396 is a burkholderia, but not a member of the b. cepacia complex, and not burkholderia multivorans. this is also demonstrated in a comparative culture experiment in which both a396 and a type culture of b. multivorans are grown side-by-side in a shake culture, and the growth is monitored daily using optical density measurements at 600 nm. under the set conditions, species a396 grew much faster than the b. multivorans type strain (fig. 1).[0234] 1.3.2 dna-dna hybridization[0235] in order to confirm that isolate a396 is a new species of burkholderia, a dna-dna hybridization experiment with burkholderia multivorans (the closest 16srrna sequence match) is conducted. biomass for both a396 and b. multivorans is produced in isp2 broth, grown over 48 hours at 200 rpm/25 degrees centigrade in fernbach flasks. the biomass is aseptically harvested by centrifugation. the broth is decanted and the cell pellet is resuspended in a 1:1 solution of water: isopropanol. dna-dna hybridization experiments are performed by the dsmz, the german collection of microorganisms and cell cultures in germany. dna is isolated using a french pressure cell (thermo spectronic) and is purified by chromatography on hydroxyapatite as described by cashion et al., 1977. dna-dna hybridization is carried out as described by de ley et al., 1970 under consideration of the modifications described by huss et al., 1983 using a model cary 100 bio uv/vis-spectrophotometer equipped with a peltier thermostatted 6x6 multicell changer and a temperature controller with in-situ temperature probe (varian).[0236] dsmz reported percent dna-dna similarly between a396 and burkholderia multivorans of 37.4 percent. the results indicate that burkholderia sp strain a396 does not belong to the species burkholderia multivorans when the recommendations of a threshold value of 70 percent dna-dna similarity for the definition of bacterial species by the ad hoc committee (wayne et al., 1987) are considered.[0237] 1.4. biochemical profile using biolog gn2 plates[0238] for the carbon source utilization profile, a396 is grown overnight on potato dextrose agar (pda). the culture is transferred to bug agar to produce an adequate culture for biolog experiments as recommended by the manufacturer (biolog, hayward, calif.). [0239] the biochemical profile of the microorganism is determined by inoculating onto a biolog gn2 plate and reading the plate after a 24-hour incubation using the microlog 4-automated microstation system. identification of the unknown bacteria is attempted by comparing its carbon utilization pattern with the microlog 4 gram negative database.[0240] no clear definitive matches are found to the biolog profile. the closest matches all had less than 35 percent similarity with a396: pseudomonas spinosa (burkholderia), burkholderia cepacia, and burkholderia pseudomallei. the results are shown in table 1.table 1biochemical profile of a396substrateresultsubstrateresultcyclodextrin-l-arabinose-dextrin-d-arabitol-glycogen-d-cellobiose-tween 40+erythritol-tween 80+d-fructose-n-acetyl-d-galactoseamine-l-fucose-n-acetyl-d-glucosamine-d-galactose+/-adonitol-gentibiose-succinic acid mon-methyl-d-glucose+esteracetic acid-m-inositol-cis-aconitic acid-d-lactose-citric acid-lactulose-formic acid+maltose-d-galactonic acid lactone-d-mannitol-d-galacturonic acid-d-mannose-d-gluconic acid-d-melibiose-d-glucosaminic acid- beta -methyl-d-glucoside-d-glucuronic acid-d-psicose-a-hydroxyburytic acid-d-raffinose- beta -hydroxybutyric acid+l-rhamonose-gamma-hydroxybutyric acid-d-sorbitol-p-hydroxyphenylacetic acid-sucrose-itaconic acid-d-trehalose+a-keto butyric acid-turanose-a-keto glutaric acid-xylitol-a-ket valeric acid-pyruvic acid methyl-estherd,l-lactic acid-uridine-malonic acid-thymidine-propionic acid+phenyethyl-amine-quinic acid-putrescine-d-saccharic acid-2-aminoethanol-sebacic acid-2,3-butanediol-succinic acid+glycerol+/-bromosuccinic acid-d,l-a-glycerol phosphate+/-succinamic acid-a-d-glucose-1--phosphateglucuronamide-d-glucose-6-phosphate+l-alaninamide+gamma-amino butyric acid+d-alanine-urocanic acid-l-alanine+inosine-l-alanyl-glycine-l-phenylalanine+l-asparagine+l-proline-l-aspartic acid+/-l-pyroglutamic acid-l-glutamic acid+d-serine-glycyl-l-aspartic acid-l-serine-glycyl-l-glutamic acid-l-threonine-l-histidine-d,l-carnitine-hydroxy-l-proline+l-ornithine-l-leucine-[0241] 1.5. fatty acid composition[0242] after incubation for 24 hours at 28 degrees centigrade, a loopful of well-grown cells are harvested and fatty acid methyl esters are prepared, separated and identified using the sherlock microbial identification system (midi) as described (see vandamme et al., 1992). the predominant fatty acids present in the burkholderia a396 are as follows: 16:0 (24.4 percent), cyclo 17:0 (7.1 percent), 16:0 3-oh (4.4 percent), 14:0 (3.6 percent), 19:0 ?8c (2.6 percent) cyclo, 18:0 (1.0 percent). summed feature 8 (comprising 18:1 ?7c) and summed feature 3 (comprising of 16:1 ?7c and 16:1 ?6c) corresponded to 26.2 percent and 20.2 percent of the total peak area, respectively. summed feature 2 comprising 12:0 alde, 16:1 iso i, and 14:0 3-oh) corresponded to 5.8 percent of the total peak area while summed feature 5 comprising 18:0 ante and 18:2 ?6,9c corresponded to 0.4 percent. other fatty acids detected in a396 in minor quantities included: 13:1 at 12-13 (0.2 percent), 14:1 ?5c (0.2 percent), 15:0 3-oh (0.13 percent), 17:1 ?7c (0.14 percent), 17:0 (0.15 percent), 16:0 iso 3-oh (0.2 percent), 16:0 2-oh (0.8 percent), 18:1 ?7c 11-methyl (0.15 percent), and 18:1 2-oh (0.4 percent).[0243] a comparison of the fatty acid composition of a396 with those of known microbial strains in the midi database suggested that the fatty acids in the novel strain a396 were most similar with those of burkholderia cenocepacia. [0244] 1.6 resistance to antibiotics[0245] antibiotic susceptibility of burkholderia

a396 is tested using antibiotic disks on muller-hinton medium as described in pml microbiological's technical data sheet #535. results obtained after 72-hour incubation at 25 degrees centigrade are presented in table 2 below.table 2susceptibility of mbi-206 to various antibiotics. +++ verysusceptible, ++ susceptible, -resistantconcentration (micro g)susceptibletetracycline30-kanamycin30+++erythromycin15-streptomycin10-penicillin10-ampicillin10-oxytetracycline30-chloramphenicol30++ciprofloxacin5++gentamicin10-piperacillin100+++cefuroxime30-imipenem10+++sulphamethoxazole-23.75/25++trimethoprim[0246] the results indicate that the antibiotic susceptibility spectrum of burkholderia a396 is quite different from pathogenic b. cepacia complex strains. burkholderia a396 is susceptible to kanamycin, chloramphenicol, ciprofloxacin, piperacillin, imipenem, and a combination of sulphamethoxazole and trimethoprim. as a comparison, zhou et al., 2007 tested the susceptibility of 2,621 different strains in b. cepacia complex isolated from cystic fibrosis patients, and found that only 7 percent and 5 percent of all strains were susceptible to imipenem or ciprofloxacin, respectively. they also found 85 percent of all strains to be resistant to chloramphenicol (15 percent susceptible), and 95 percent to be resistant (5 percent susceptible) to the combination of sulphamethoxazole and trimethoprim. results of zhou et al., 2007 are similar to those of pitt et al., 1996 who determined antibiotic resistance among 366 b. cepacia isolates and reported that most of them are resistant to ciprofloxacin, cefuroxime, imipenem, chloramphenicol, tetracycline, and sulphametoxacole. 2. example 2 burkholderia formulation and isolation of fractions from formulated product [0247] the following procedure is used for the purification of compounds extracted from a formulated product of mbi-206 containing a whole cell broth of a culture of burkholderia sp.:[0248] the culture broth derived from the 10-l fermentation burkholderia (a396) in hy soy growth medium and formulated using methyl 0.1 percent and propyl paraben, 0.1 percent hexanol 0.67 percent and glycosperse 0-20, 0.67 percent is extracted with amberlite xad-7 resin (asolkar et al., "weakly cytotoxic polyketides from a marine-derived actinomycete of the genus streptomyces strain cnq-085." j. nat. prod. 69:1756-1759. 2006) by shaking the cell suspension with resin at 225 rpm for two hours at room temperature. the resin and cell mass are collected by filtration through cheesecloth and washed with di water to remove salts. the resin, cell mass, and cheesecloth are then soaked for 2 h in acetone after which the acetone is filtered and dried under vacuum using rotary evaporator to give the crude extract (mbi-206-fp-ce). the crude extract is then fractionated by using reversed-phase c18 vacuum liquid chromatography (h2o/ch3oh gradient 80:20 to 0:100 percent) to give 10 fractions (see fig. 1 for schematic). these fractions are then concentrated to dryness using rotary evaporator and the resulting dry residues are screened for biological activity using a whole plant herbicidal assay. the active fractions, fractions 3, 4, 5 and 6 and indicated as mbi-206-fp-3, mbi-206-fp-4, mbi-206-fp-5, and mbi-206-fp-6 respectively are then subjected to repeatedly to reversed phase hplc separation (spectra system p4000 (thermo scientific) to give pure compounds, which are then screened in above-mentioned bioassays to locate/identify the active compounds (see fig. 2).[0249] 2.1 analysis of formulation fractions[0250] these fractions are analyzed on a thermo high performance liquid chromatography (hplc) instrument equipped with finnigan surveyor pda plus detector, autosampler plus, ms pump and a 4.6 mmx100 mm luna c18 5 um column (phenomenex). the solvent system consisted of water (solvent a) and acetonitrile (solvent b). the mobile phase begins at 10 percent solvent b and is linearly increased to 100 percent solvent b over 20 min and then kept for 4 min, and finally returned to 10 percent solvent b over 3 min and kept for 3 min. the flow rate is 0.5 ml/min. the injection volume is 10 micro l and the samples are kept at room temperature in an auto sampler.[0251] to discover the identity of the compound, additional spectroscopic data such as lc/ms and uv are recorded. compound corresponding to fraction 5, with a retention time of 17.45 minutes is not found in any of the starting materials, which indicates that the compound is a product of a chemical reaction between natural products in the microbial fermentation broth and one or more of the compounds found in the formulation agents. specifically, this fraction was analyzed using esi-lcms on a thermo finnigan lcq deca xp plus electrospray (esi) instrument using both positive and negative ionization modes in a full scan mode (m/z 100-1500 da) on a lcq deca xpplus mass spectrometer (thermo electron corp., san jose, calif.). mass spectroscopy analysis is performed under the following conditions: the flow rate of the nitrogen gas was fixed at 30 and 15 arb for the sheath and aux/sweep gas flow rate, respectively. electrospray ionization was performed with a spray voltage set at 5000 v and a capillary voltage at 35.0 v. the capillary temperature was set at 400 degrees centigrade the data was analyzed on xcalibur software. the additional new compounds found in fraction 5 were found to have a molecular weight (mw) of 194 (rt=14.74 min) and 222 (rt=17.43 min)[0252] 2.2 bioassay[0253] healthy radish plants with two to three true leaves were selected for testing. the radish plants are 13 days old at treatment. the plants are sorted so that all treatments are equivalent in foliage surface area and plant height. the pots are labeled with treatment number and repetition number. three repetitions per treatment are tested.[0254] ten fractions of mbi-206 formulated product are tested. the fractions are at a concentration of 10 mg/ml. the crude extracts of the formulated product and broth are also tested. an untreated control (treated with deionized water) and a positive control (roundup super concentrate at a rate of 2.5 fluid ounces per gallon) are included in the test.[0255] the following treatments were tested as shown in table 3:table 3test descriptiontreatmentsample iddescription1mbi-206-fp-f14 percent ethanol/water (0.2 percent glycosperse)2mbi-206-fp-f24 percent ethanol/water (0.2 percent glycosperse)3mbi-206-fp-f34 percent ethanol/water (0.2 percent glycosperse)4mbi-206-fp-f44 percent ethanol/water (0.2 percent glycosperse)5mbi-206-fp-f54 percent ethanol/water (0.2 percent glycosperse)6mbi-206-fp-f64 percent ethanol/water (0.2 percent glycosperse)7mbi-206-fp-f74 percent ethanol/water (0.2 percent glycosperse)8mbi-206-fp-f84 percent ethanol/water (0.2 percent glycosperse)9mbi-206-fp-f94 percent ethanol/water (0.2 percent glycosperse)10mbi-206-fp-f104 percent ethanol/water (0.2 percent glycosperse)11mbi-206-fp-ce4 percent ethanol/water (0.2 percent glycosperse)12mbi-206-ce (broth)4 percent ethanol/water (0.2 percent glycosperse)13utcutc (di water)14positive controlpos. control (roundup @ 2.5 fl oz/gal(ai: glyphosate @ 50.2 percent))[0256] all products and treatments are well shaken prior to application. treatments are applied using a nozzle from a 2-ounce spray bottle. separate spray nozzles were used for each treatment. the plant foliage is sprayed evenly and with a moderate volume (i.e. neither a light misting nor a heavy application that resulted in runoff). two milliliters of each treatment are sprayed simultaneously over the three repetitions of each treatment so that each plant is treated with approximately 0.67 milliliters of treatment solution.[0257] the plants are allowed to air dry and are then randomized in holding trays. each tray is labeled with the experiment name and treatment date and placed on the laboratory greenhouse shelves. the laboratory greenhouse maintains a temperature of 70-80 degrees fahrenheit and a relative humidity of 30-40 percent. throughout the bioassay, plants are watered from below by filling the holding trays with an appropriate amount of water so that plant foliage remained dry.[0258] results are taken at 3, 8, and 14 days after treatment. symptoms included foliage burning and plant stunting. the following rating scale, shown in table 4 is used to quantify efficacy. ratings are determined by observing the following factors relative to the plants of the untreated control: overall plant health, average plant height, and foliage health. symptoms of affected plants may include discolored/spotted/burnt/bleached foliage, warped/twisted/curled leaves, side branching (due to damaged apical meristem), plant dieback, or death.table 4rating scale0 0 percent control symptoms0.5 ?5 percent control symptoms1 10 percent control symptoms2 25 percent control symptoms3 50 percent control symptoms4 75 percent control symptoms5100 percent control symptoms[0259] the mean of three readings is shown in fig. 2. in a whole plant herbicide test, fractions 4 and 5 show good herbicidal activity (see fig. 2).[0260] 2.3 isolation of pesticidal compounds from formulation[0261] this fraction was further purified using a hplc c-18 column (phenomenex, luna 10u c18(2) 100 a, 250x30), water:acetonitrile gradient solvent system (0-10 min 80 percent aqueous ch3cn, 10-25 min 80-65 percent aqueous ch3cn, 25-50 min 65-50 percent aqueous ch3cn, 50-60 min 50-70 percent aqueous ch3cn, 60-80 min 70-0 percent aqueous ch3cn, 80-85 min 0-20 percent aqueous ch3cn) at 8 ml/min flow rate and uv detection of 210 nm, to give butyl paraben, retention time 59.15 min (mbi206-fp-f5h32) and hexyl paraben, retention time 74.59 min (mbi206-fp-f5h40) respectively.[0262] 2.3.1 nmr spectroscopy analysis of compounds[0263] nmr spectra were measured on a bruker 600 mhz gradient field spectrometer. the reference is set on the internal standard tetramethylsilane (tms, 0.00 ppm).[0264] 2.3.1.1 structure elucidation of hexyl paraben (mbi206-fp-f5h40)[0265] the active compound was isolated as a colorless solid, with uv absorption at 248 nm. the (-) esims showed molecular ion at 221 (m-h) corresponding to the molecular weight of 222. the compound exhibited 1h nmr delta signals at 7.90, 6.85, 4.28, 1.76, 1.46, 1.38, 1.37, 0.94 and has 13c nmr values of 166.84, 162.12, 131.34 (2c), 121.04, 114.83 (2c), 64.32, 31.25, 28.43, 25.45, 22.18. 12.93. the molecular formula of c13h18o3 (5 degrees of unsaturation), was assigned by combination of nmr and esi mass spectrometry data. the 1h nmr spectrum exhibited signals for an a2b2-type aromatic signals at delta 7.90, 2h d, j=8.5 hz, and 6.85, 2h d, j=8.5 hz. furthermore, the 1h nmr spectrum revealed the presence of -ch2-ch2-ch2-ch2-ch2-ch3 group, at delta 4.28, 2h, t, j=7.3 hz 1.76, 2h, m 1.46, 2h, m 1.38, 2h. m 1.37, 2h, m, and 0.94, 3h, t, j=7.3 hz. from an analysis of the foregoing spectral data, the structure of the aromatic polyketide was established as hexyl paraben, which was confirmed by detail analysis of the cosy, hmqc and hmbc experiments. a literature search revealed that this compound has been reported as synthetic compound.[0266] 2.3.1.2 structure elucidation of butyl paraben (mbi206-fp-f5h32)[0267] this compound was obtained as a colorless solid with uv max at 248 nm. the lcms analysis in the negative mode showed molecular ion at m/z 193 corresponding to the molecular formula 194. by comparison of the uv, ms and nmr data with that of hexyl paraben with mw 222, this compound was found to be the analogue of hexyl paraben. the only difference between them was only in the side chain. thus, the structure of butyl paraben was assigned to this compound with mw 194. a search in the literature suggested that this compound is also known as a synthetic compound.[0268] 2.3.2 herbicidal activity[0269] the pure compounds (butyl paraben [mbi206-fp-f5h32] and hexyl paraben [mbi206-fp-f5h40]) obtained from fraction 5 were tested at a concentration of 10 mg/ml. an untreated control (treated with deionized water), the formulation blank (at 3 percent v/v and 10 percent v/v), and a positive control (roundup super concentrate at a rate of 2.5 fluid ounces per gallon) are included in the test.[0270] the following treatments were tested as shown in table 5:table 5treatment regimentest descriptiontreat-vol (ml)mentsample iddescriptionof sample1utcutc (di water)22butyl paraben4 percent ethanol/water2(mbi206-fp-f5h32)(0.2 percent glycosperse)3hexyl paraben4 percent ethanol/water2(mbi206-fp-f5h40)(0.2 percent glycosperse)4blankformulation2blank @ 3 percent v/v5blankformulation2blank @ 10 percent v/v6positive controlpositive control2(roundup @ 2.5 fl oz/gal(ai: glyphosate @ 50.2 percent)) results obtained are set forth in table 6. table 6bioassay resultsday-1 readingday-7 readingrepli-controlreplicatecontrolcatesstdstdtreatment123avgdev123avgdev1 0 0 00.00.00000.00.022552518.311.5 251037.524.2 13.8 375757575.00.087.587.587.587.5 0.04 0 0 00.00.00000.00.05 0 0 00.00.00000.00.06 0 0 00.00.087.587.57583.3 7.2 based on the data presented in the table above, hexyl paraben was found to be the most potent herbicidal compound. [0271] 2.3.3 insecticidal acitivity[0272] the insecticidal activity of butyl paraben (mbi206-fp-f5h32) and hexyl paraben (mbi206-fp-f5h40) were tested in a laboratory assay using a 96-well diet overlay assay with 1st instar beet armyworm (spodoptera exigua) larvae using microtiter plates with 200 ul of solid, artificial beet armyworm diet in each well. one hundred (100) microliters of each test sample (containing 40 ug of sample) is pipetted on the top of the diet (one sample in each well), and the sample is let dry under flowing air until the surface is dry. each sample was tested in six replicates, and water and a commercial dipel product are used as negative and positive controls, respectively. one first instar larvae of the test insect (beet armyworm-spodoptera exigua) was placed in each well, and the plate was covered with plastic cover with airholes. the plates with insects were incubated at 26 degrees centigrade for 6 days with daily mortality evaluations. based on the results presented in table 7, hexyl paraben and butyl paraben resulted in 71 percent and 9 percent mortality, respectively.table 7insecticidal bioassay data for butyl paraben (mbi206-fp-f5h32)and hexyl paraben (mbi206-fp-f5h40) against 1st instarbeet army worm (spodoptera exigua).sample informationday 3day 4butyl paraben mbi206-fp-f5h32) @ 40 micro g/well8.938.9286hexyl parben (mbi206-fp-f5h40) @ 40 micro g/well50.0070.833 2 percent dipel0.000 4 percent dipel25.0025 8 percent dipel0.002516 percent dipel0.00032 percent dipel0.00064 percent dipel25.0010040 percent etoh14.2914.286dipel33.33100h200.000[0273] 2.3.4 nematicidal acitivity in vitro testing of butyl paraben (mbi206-fp-f5h32) and hexyl paraben (mbi206-fp-f5h40):[0274] the pure sample of butyl paraben and hexyl paraben was used in an in vitro 96-well plastic cell-culture plate bioassay. 15-20 nematodes in a 50 micro l water solution were exposed to 3 micro l of a 20 mg/ml peak concentrate for a 24 hour period at 25 degrees centigrade once the incubation period was completed, results were recorded based on a visual grading of immobility of the juvenile nematodes (j2's) in each well treated with compounds each treatment was tested in replicate of 4 wells. results are shown in table 8, which shows the results of two different 96-well plate extract bioassays of compounds. three controls are included in each trial 1 positive (1 percent avid) and 2 negative (dmso and water). trials (t1) was carried out using m. incognita nematodes and trail (t2) was carried out using m. hapla nematodes, the samples were dissolved in 100 percent dmso. the hexyl paraben (mbi206-fp-f5h40) showed the excellent control with the immobility of 93.75 percent against m. incognita as compared to butyl paraben with 81.25 percent immobility.table 8effect of hexyl paraben and butyl paraben on m. incognita andm. hapla. percent immobility percent immobilitymean percent sample information(trial # t1)(trial # t2)immobilitymbi206-fp-f5h327587.581.25(butyl paraben)mbi206-fp-f5h4087.510093.75(hexyl paraben)avid (1 percent)757575dmso6.2503.12water000[0275] 2.3.5 study of formation of parabens during formulation of the product[0276] in order to understand the formation of these parabens, the effect of change in alcohol in the formulation was taken into consideration. the different carbon chain alcohols were used in the formulation and the formation of the new parabens were monitored using lcms.[0277] four separate formulation experiments were performed using butanol, hexanol, octanol and cetyl alcohol and all other ingradients were kept same. the formulation products were extracted over the period of 2 days and 3 weeks. the crude extract obtained from these formulations were analysed by lcms. the corresponding parabens formed for all alcohols except for cetyl alcohol. the yield of the parabens was found to be the highest for butyl paraben, followed by hexyl paraben and then octyl paraben for the one day old formulation product. the analysis result even after 3 weeks remain the same order i.e., butyl parabenhexyl parabenoctyl paraben. thus, the rate of formation of these parabens such as butyl paraben, hexyl paraben and octyl paraben was found to depend on the carbon chain (number of carbon) of the solvent (alcohol) of the corresponding alcohol used in the formulation (butanol (c4)hexanol (c6)octanol (c8) etc). the formation of cetyl paraben was not detected till 3 weeks. the yields of these parabens were found to increase over the time.[0278] another set of experiments were carried out to understand the role of whole cell broth (wcb) in the formation of the new paraben analogues. in 4 different expt. with were carried out with following changes in the formulation-1 expt-1: propyl paraben (no methyl paraben)+wcb+other ingredientsexpt-2: methyl paraben (no propyl paraben) +wcb+other ingredientsexpt-3: no parabens (both)+wcb+other ingredients.expt-4: methyl paraben+propyl paraben+other ingredients+no wcb. the above formulations were extracted separately and the crude extract obtained were then analysed using lcms. the formation of the hexyl paraben was observed only in the first two experiments. thus, these experiments suggested that wcb plays a very important role in the formation of these parabens. 3. example 3 isolation of templazole a and b methods and materials [0283] the following procedure is used for the purification of templazole a and b extracted from cell culture of burkholderia sp (see fig. 3):[0284] the culture broth derived from the 10-l fermentation burkholderia (a396) in hy soy growth medium is extracted with amberlite xad-7 resin (asolkar et al., 2006) by shaking the cell suspension with resin at 225 rpm for two hours at room temperature. the resin and cell mass are collected by filtration through cheesecloth and washed with di water to remove salts.[0285] the resin, cell mass, and cheesecloth are then soaked for 2 h in acetone after which

the acetone is filtered and dried under vacuum using rotary evaporator to give the crude extract. the crude extract is then fractionated by using reversed-phase c18 vacuum liquid chromatography (h2o/ch3oh gradient 90:10 to 0:100 percent) to give 11 fractions. these fractions are then concentrated to dryness using rotary evaporator and the resulting dry residues are screened for biological activity using 96 well plate lettuce seeding assay. the active fractions are then subjected to reversed phase hplc (spectra system p4000 (thermo scientific) to give pure compounds, which are then screened in above mentioned bioassays to locate/identify the active compounds. to confirm the identity of the compound, additional spectroscopic data such as lc/ms and nmr is recorded.[0286] the active fraction 5 is purified further by using hplc c-18 column (phenomenex, luna 10u c18(2) 100 a, 250x30), water:acetonitrile gradient solvent system (0-10 min 80 percent aqueous ch3cn, 10-25 min 80-65 percent aqueous ch3cn, 25-50 min 65-50 percent aqueous ch3cn, 50-60 min 50-70 percent ch3cn, 60-80 min 70-0 percent aqueous ch3cn, 80-85 min 0-20 percent aqueous ch3cn) at 8 ml/min flow rate and uv detection of 210 nm, to give templazole b, retention time 46.65 min. the other active fraction 7 is also purified using hplc c-18 column (phenomenex, luna 10u c18(2) 100 a, 250x30), water:acetonitrile gradient solvent system (0-10 min 80 percent aqueous ch3cn, 10-25 min 80-60 percent aqueous ch3cn, 25-50 min 60-40 percent aqueous ch3cn, 50-60 min 40 percent ch3cn, 60-80 min 40-0 percent aqueous ch3cn, 80-85 min 0-20 percent aqueous ch3cn) at 8 ml/min flow rate and uv detection of 210 nm, to give templazole a, retention time 70.82 min.[0287] mass spectroscopy analysis of pure compounds is performed on a thermo finnigan lcq deca xp plus electrospray (esi) instrument using both positive and negative ionization modes in a full scan mode (m/z 100-1500 da) on a lcq deca xpplus mass spectrometer (thermo electron corp., san jose, calif.). thermo high performance liquid chromatography (hplc) instrument equipped with finnigan surveyor pda plus detector, autosampler plus, ms pump and a 4.6 mmx100 mm luna c18 5 micro m column (phenomenex). the solvent system consists of water (solvent a) and acetonitrile (solvent b). the mobile phase begins at 10 percent solvent b and is linearly increased to 100 percent solvent b over 20 min and then kept for 4 min, and finally returned to 10 percent solvent b over 3 min and kept for 3 min. the flow rate is 0.5 ml/min. the injection volume was 10 micro l and the samples are kept at room temperature in an auto sampler. the compounds are analyzed by lc-ms utilizing the lc and reversed phase chromatography. mass spectroscopy analysis of the present compounds is performed under the following conditions: the flow rate of the nitrogen gas was fixed at 30 and 15 arb for the sheath and aux/sweep gas flow rate, respectively. electrospray ionization was performed with a spray voltage set at 5000 v and a capillary voltage at 35.0 v. the capillary temperature was set at 400 degrees centigrade the data was analyzed on xcalibur software. the active compound templazole a has a molecular mass of 298 and showed m/z ion at 297.34 in negative ionization mode. the lc-ms chromatogram for templazole b suggests a molecular mass of 258 and exhibited m/z ion at 257.74 in negative ionization mode.[0288] 1h, 13c and 2d nmr spectra were measured on a bruker 500 mhz delta 600 mhz gradient field spectrometer. the reference is set on the internal standard tetramethylsilane (tms, 0.00 ppm).[0289] for structure elucidation of templazole a, the purified compound with a molecular weight 298 is further analyzed using a 500 mhz nmr instrument, and has 1h nmr delta values at 8.44, 8.74, 8.19, 7.47, 7.31, 3.98, 2.82, 2.33, 1.08 and has 13c nmr values of delta 163.7, 161.2, 154.8, 136.1, 129.4, 125.4, 123.5, 123.3, 121.8, 121.5, 111.8, 104.7, 52.2, 37.3, 28.1, 22.7, 22.7. templazole a has uv absorption bands at 226, 275, 327 nm, which suggested the presence of indole and oxazole rings. the molecular formula, c17h18n2o3, was determined by interpretation of 1h, 13c nmr and hresi ms data m/z 299.1396 (m+h)+ (calcd for c17h19n2o3, 299.1397), which entails a high degree of unsaturation shown by 10 double bond equivalents. the 13c nmr spectrum revealed signals for all 17 carbons, including two methyls, a methoxy, a methylene carbon, an aliphatic methine, an ester carbonyl, and eleven aromatic carbons. the presence of 3'-substituted indole was revealed from 1h-1h cosy and hmbc spectral data. the 1h-1h cosy and hmbc also indicated the presence of a carboxylic acid methyl ester group and a -ch2-ch-(ch3)2 side chain. from the detailed analysis of 1h-1h cosy, 13c, and hmbc data it was derived that the compound contained an oxazole nucleus. from the 2d analysis it was found that the iso-butyl side chain was attached at c-2 position, a carboxylic acid methyl ester at c-4 position and the indole unit at c-5 position to give templazole a.[0290] the second herbicidally active compound, templazole b, with a molecular weight 258 is further analyzed using a 500 mhz nmr instrument, and has 1h nmr delta values at 7.08, 7.06, 6.75, 3.75, 2.56, 2.15, 0.93, 0.93 and 13c nmr values of delta 158.2, 156.3, 155.5, 132.6, 129.5, 129.5, 127.3, 121.8, 115.2, 115.2, 41.2, 35.3, 26.7, 21.5, 21.5. the molecular formula, is assigned as c15h18n2o2, which is determined by interpretation of 1h, 13c nmr and mass data. the 13c nmr spectrum revealed signals for all 15 carbons, including two methyls, two methylene carbons, one aliphatic methine, one amide carbonyl, and nine aromatic carbons. the general nature of the structure was deduced from 1h and 13c nmr spectra that showed a para-substituted aromatic ring [delta 7.08 (2h, d, j=8.8 hz), 6.75 (2h, d, j=8.8 hz), and 132.7, 129.5, 115.2, 127.3, 115.2, 129.5]. the 1h nmr spectrum of this structure together with the 1h-1h cosy and hsqc spectra, displayed characteristic signals for an isobutyl moiety [delta 0.93 (6h, d, j=6.9 hz), 2.15 (1h, sept., j=6.9 hz), 2.57 (2h, d, j=6.9 hz). in addition, an olefinic/aromatic proton at (delta 7.06, s), and a carbonyl carbon group (delta 158.9) were also found in the 1h and 13c nmr spectra. on inspection of the hmbc spectrum, the h-1' signal in the isobutyl moiety correlated with the olefinic carbon (c-2, delta 156.3), and the olefinic proton h-4 correlated with (c-5, delta 155.5 c-2, 156.3 and c-1?, 41.2). the methylene signal at delta 3.75 correlated with c-5, c-4 as well as the c-2? of the para-substituted aromatic moiety. all these observed correlations suggested the connectivity among the isobutyl, and the para-substituted benzyl moieties for the skeleton of the structure as shown. in addition, the carboxamide group is assigned at the para position of the benzyl moiety based on the hmbc correlation from the aromatic proton at h-4?and h-6? position. thus, based on the above data, the structure was designated as templazole b. 4. example 4 isolation of fr901228 [0291] the whole cell broth from the fermentation of burkholderia sp. in an undefined growth medium is extracted with amberlite xad-7 resin (asolkar et al., 2006) by shaking the cell suspension with resin at 225 rpm for two hours at room temperature. the resin and cell mass are collected by filtration through cheesecloth and washed with di water to remove salts. the resin, cell mass, and cheesecloth are then soaked for 2 h in acetone after which the acetone is filtered and dried under vacuum using rotary evaporator to give the crude extract. the crude extract is then fractionated by using reversed-phase c18 vacuum liquid chromatography (h2o/ch3oh gradient 90:10 to 0:100 percent) to give 11 fractions. these fractions are then concentrated to dryness using rotary evaporator and the resulting dry residues are screened for biological activity using both insect bioassay as well as herbicidal bioassay. the active fractions are then subjected to reversed/normal phase hplc (spectra system p4000 thermo scientific) to give pure compounds, which are then screened in herbicidal, insecticidal and nematicidal bioassays described below to locate/identify the active compounds. to confirm the identity of the compound, additional spectroscopic data such as lc/ms and nmr is recorded.[0292] mass spectroscopy analysis of active peaks is performed on a thermo finnigan lcq deca xp plus electrospray (esi) instrument using both positive and negative ionization modes in a full scan mode (m/z 100-1500 da) on a lcq deca xpplus mass spectrometer (thermo electron corp., san jose, calif.). thermo high performance liquid chromatography (hplc) instrument equipped with finnigan surveyor pda plus detector, autosampler plus, ms pump and a 4.6 mmx100 mm luna c18 5 micro m column (phenomenex). the solvent system consists of water (solvent a) and acetonitrile (solvent b). the mobile phase begins at 10 percent solvent b and is linearly increased to 100 percent solvent b over 20 min and then kept for 4 min, and finally returned to 10 percent solvent b over 3 min and kept for 3 min. the flow rate is 0.5 ml/min. the injection volume is 10 micro l and the samples are kept at room temperature in an auto sampler. the compounds are analyzed by lc-ms utilizing the lc and reversed phase chromatography. mass spectroscopy analysis of the present compounds is performed under the following conditions: the flow rate of the nitrogen gas is fixed at 30 and 15 arb for the sheath and aux/sweep gas flow rate, respectively. electrospray ionization is performed with a spray voltage set at 5000 v and a capillary voltage at 35.0 v. the capillary temperature is set at 400 degrees centigrade the data is analyzed on xcalibur software. based on the lc-ms analysis, the active insecticidal compound from fraction 6 has a molecular mass of 540 in negative ionization mode.[0293] for structure elucidation, the purified insecticidal compound from fraction 6 with molecular weight 540 is further analyzed using a 500 mhz nmr instrument, and has 1h nmr values at 6.22, 5.81, 5.69, 5.66, 5.65, 4.64, 4.31, 3.93, 3.22, 3.21, 3.15, 3.10, 2.69, 2.62, 2.26, 2.23. 1.74, 1.15, 1.12, 1.05, 1.02 and has 13c nmr values of 172.99, 172.93, 169.57, 169.23, 167.59, 130.74, 130.12, 129.93, 128.32, 73.49, 62.95, 59.42, 57.73, 38.39, 38.00, 35.49, 30.90, 30.36, 29.26, 18.59, 18.38, 18.09, 17.93, 12.51. the nmr data indicates that the compound contains amino, ester, carboxylic acid, aliphatic methyl, ethyl, methylene, oxymethylene, methine, oxymethine and sulfur groups. the detailed 1d and 2d nmr analysis confirms the structure for the compound as fr901228 as a known compound. 5. example 5 isolation of templamide a, b, fr901465 and fr901228 methods and materials [0294] the culture broth derived from the 10-l fermentation burkholderia (a396) in hy soy growth medium is extracted with amberlite xad-7 resin (asolkar et al., 2006) by shaking the cell suspension with resin at 225 rpm for two hours at room temperature. the resin and cell mass are collected by filtration through cheesecloth and washed with di water to remove salts. the resin, cell mass, and cheesecloth are then soaked for 2 h in acetone after which the acetone is filtered and dried under vacuum using rotary evaporator to give the crude extract. the crude extract is then fractionated by using reversed-phase c18 vacuum liquid chromatography (h2o/ch3oh gradient 90:10 to 0:100 percent) to give 11 fractions. these fractions are then concentrated to dryness using rotary evaporator and the resulting dry residues are screened for biological activity using 96 well plate lettuce seeding (herbicidal) and early 3rd instar beet armyworm (insecticidal) assay. the active fractions are then subjected to repeatedly to reversed phase hplc separation (spectra system p4000 (thermo scientific) to give pure compounds, which are then screened in above-mentioned bioassays to locate/identify the active compounds. to confirm the identity of the compound, additional spectroscopic data such as lc/ms, hrms and nmr are recorded.[0295] the active fraction 6 is purified further by using hplc c-18 column (phenomenex, luna 10u c18(2) 100 a, 250x30), water:acetonitrile gradient solvent system (0-10 min 80 percent aqueous ch3cn, 10-25 min 80-65 percent aqueous ch3cn, 25-50 min 65-50 percent aqueous ch3cn, 50-60 min 50-70 percent aqueous ch3cn, 60-80 min 70-0 percent aqueous ch3cn, 80-85 min 0-20 percent aqueous ch3cn) at 8 ml/min flow rate and uv detection of 210 nm, to give templamide a, retention time 55.64 min and fr901465, retention time 63.59 min and fr90128, retention time 66.65 min respectively. the other active fraction 6 is also purified using hplc c-18 column (phenomenex, luna 10u c18(2) 100 a, 250x30), water:acetonitrile gradient solvent system (0-10 min 70-60 percent aqueous ch3cn, 10-20 min 60-40 percent aqueous ch3cn, 20-50 min 40-15 percent aqueous ch3cn, 50-75 min 15-0 percent ch3cn, 75-85 min 0-70 percent aqueous ch3cn) at 8 ml/min flow rate and uv detection of 210 nm, to give templamide b, retention time 38.55 min.[0296] mass spectroscopy analysis of pure compounds is performed on a thermo finnigan lcq deca xp plus electrospray (esi) instrument using both positive and negative ionization modes in a full scan mode (m/z 100-1500 da) on a lcq deca xpplus mass spectrometer (thermo electron corp., san jose, calif.). thermo high performance liquid chromatography (hplc) instrument equipped with finnigan surveyor pda plus detector, autosampler plus, ms pump and a 4.6 mmx100 mm luna c18 5 micro m column (phenomenex) is used. the solvent system consists of water (solvent a) and acetonitrile (solvent b). the mobile phase begins at 10 percent solvent b and is linearly increased to 100 percent solvent b over 20 min and then kept for 4 min, and finally returns to 10 percent solvent b over 3 min and kept for 3 min. the flow rate is 0.5 ml/min. the injection volume is 10 micro l and the samples are kept at room temperature in an auto sampler. the compounds are analyzed by lc-ms utilizing the lc and reversed phase chromatography. mass spectroscopy analysis of the present compounds is performed under the following conditions: the flow rate of the nitrogen gas is fixed at 30 and 15 arb for the sheath and aux/sweep gas flow rate, respectively. electrospray ionization is performed with a spray voltage set at 5000 v and a capillary voltage at 45.0 v. the capillary temperature is set at 300 degrees centigrade the data is analyzed on xcalibur software. the active compound templamide a has a molecular mass of 555 based on the m/z peak at 556.41 [m+h]+ and 578.34 [m+na]+ in positive ionization mode. the lc-ms analysis in positive mode ionization for templamide b suggests a molecular mass of 537 based m/z ions at 538.47 [m+h]+ and 560.65 [m+na]+. the molecular weight for the compounds fr901465 and fr901228 are assigned as 523 and 540 respectively on the basis of lcms analysis.[0297] 1h, 13c and 2d nmr spectra are measured on a bruker 600 mhz gradient field spectrometer. the reference is set on the internal standard tetramethylsilane (tms, 0.00 ppm).[0298] for structure elucidation of templamide a, the purified compound with molecular weight 555 is further analyzed using a 600 mhz nmr instrument, and has 1h nmr delta values at 6.40, 6.39, 6.00, 5.97, 5.67, 5.54, 4.33, 3.77, 3.73, 3.70, 3.59, 3.47, 3.41, 2.44, 2.35, 2.26, 1.97, 1.81, 1.76, 1.42, 1.37, 1.16, 1.12, 1.04 and has 13c nmr values of delta 173.92, 166.06, 145.06, 138.76, 135.71, 129.99, 126.20, 123.35, 99.75, 82.20, 78.22, 76.69, 71.23, 70.79, 70.48, 69.84, 60.98, 48.84, 36.89, 33.09, 30.63, 28.55, 25.88, 20.37, 18.11, 14.90, 12.81, 9.41. the 13c nmr spectrum exhibits 28 discrete carbon signals which are attributed to six methyls, four methylene carbons, and thirteen methines including five sp2, four quaternary carbons. the molecular formula, c28h45no10, is determined by interpretation of 1h, 13c nmr and hresi ms data. the detailed analysis of 1h-1h cosy, hmbc and hmqc spectral data reveals the following substructures (i-iv) and two isolated methylene and singlet methyl groups. these substructures are connected later using the key hmbc correlations to give the planer structure for the compound, which has been not yet reported in the literature and designated as templamide a. this polyketide molecule contains two tetrahydropyranose rings, and one conjugated amide.[ftimg=60402176] substructures i-iv assigned by analysis of 1d and 2d nmr spectroscopic data.[0299] the (+) esims analysis for the second herbicidal compound, shows m/z ions at 538.47 [m+h]+ and 560.65 [m+na]+ corresponding to the molecular weight of 537. the molecular formula of c28h43no9 is determined by interpretation of the esims and nmr data analysis. the 1h and 13c nmr of this compound is similar to that of templamide a except that a new isolated -ch2- appear instead of the non-coupled methylene group in templamide a. the small germinal coupling constant of 4.3 hz is characteristic of the presence of an epoxide methylene group. the presence of this epoxide is further confirmed from the 13c nmr shift from 60.98 in templamide a to 41.07 in compound with mw 537. the molecular formulae difference between these two compounds is reasonably explained by elimination of the water molecule followed by formation of epoxide. thus, on the basis of based nmr and ms analysis the structure for the new compound was assigned and was designated as templamide b.[0300] for structure elucidation, the purified compound from fraction 6 with molecular weight 523 is further analyzed using a 600 mhz nmr instrument, and has 1h nmr values at 6.41, 6.40, 6.01, 5.98, 5.68, 5.56, 4.33, 3.77, 3.75, 3.72, 3.65, 3.59, 3.55, 3.50, 2.44, 2.26, 2.04, 1.96, 1.81, 1.75, 1.37, 1.17, 1.04 and has 13c nmr values of 172.22, 167.55, 144.98, 138.94, 135.84, 130.14, 125.85, 123.37, 99.54, 82.19, 78.28, 76.69, 71.31, 70.13, 69.68, 48.83, 42.52, 36.89, 33.11, 30.63, 25.99, 21.20, 20.38, 18.14, 14.93, 12.84. the detailed 1h and 13c nmr analysis of compound suggested that this compound was quite similar to compound templamide b the only difference was in the ester side chain an acetate moiety was present instead of a propionate moiety in the side chain. the detailed 1d and 2d nmr analysis confirm the structure for the compound as fr901465 as a known compound.[0301] based on the lc-ms analysis, the other compound from fraction 6 has a molecular mass of 540 in negative ionization mode. for structure elucidation, the purified compound from fraction 5 with molecular weight 540 is further analyzed using a 500 mhz nmr instrument, and has 1h nmr values at 6.22, 5.81, 5.69, 5.66, 5.65, 4.64, 4.31, 3.93, 3.22, 3.21, 3.15, 3.10, 2.69, 2.62, 2.26, 2.23. 1.74, 1.15, 1.12, 1.05, 1.02 and has 13c nmr values of 172.99, 172.93, 169.57, 169.23, 167.59, 130.74, 130.12, 129.93, 128.32, 73.49, 62.95, 59.42, 57.73, 38.39, 38.00, 35.49, 30.90, 30.36, 29.26, 18.59, 18.38, 18.09, 17.93, 12.51. the nmr data indicates that the compound

contains amino, ester, carboxylic acid, aliphatic methyl, ethyl, methylene, oxymethylene, methine, oxymethine and sulfur groups. the detailed 1d and 2d nmr analysis confirm the structure for the compound as fr901228 as a known compound.[0302] the molecular weight for the other active compound (f8h17) from fraction f8 was assigned as 1080 based on the molecular ion peak at 1081.75 (m+h) in positive esi mode and further confirmed by the negative esims with base peak at 1079.92. this compound showed uv absorption at 234 nm. example 6 burkholderia sp. as an algicide [0303] burkholderia sp. a396 is grown in an undefined mineral medium for 5 days (25 degrees centigrade, 200 rpm). cells are separated from the supernatant by centrifugation at 8,000 g, and the cell-free supernatant is used to test the algaicidal activity against a unicellular algal species (p. subcapitata) and a blue-green alga species (anabaena sp.). a specified increasing amount of supernatant is added into wells of a 24-well polystyrene plate that has the specified algae growing in 750 micro liters of gorham's medium to determine the dose-response curve for the test supernatant on each algae type. each treatment is done in two replicates, and the blank growth medium is used as a negative control. the plate is closed with a lid and incubated for 48 hours under constant growth light at room temperature. after 48 hours, the fluorescence (at 700 nm) of the suspension in each well is measured using a spectramax gemini xs plate reader, and the reduction in fluorescence compared with the un-treated control is converted into percent control of algal growth. results presented in table 9 below show excellent control of unicellular algae and good control or algistatic effect on blue-green algae.table 9control of two algal species by burkholderia a396 cell-free brothmeasured as a reduction of fluorescence at 700 nm. percent controlamount of broth per wellp. subcapitataanabaena sp. 0 micro l0010 micro l74.20.020 micro l84.10.030 micro l85.50.040 micro l88.30.050 micro l90.60.0100 micro l 94.636.4 example 7 control of chlamydomonas reinhardtii by crude extract and fractions of burkholderia sp [0304] fractions obtained from the fractionation of crude extract of burkholderia sp. were tested for algaecide activity against chlamydomonas reinhardtii. an increasing volume of fraction (with concentration of 20 mg/ml in ethanol) was added to a clear 48 well polystyrene plate with 750 micro liters of the specified algae growing. each treatment was done in two replicates and the solvent (ethanol) used as a negative control. the plate was closed with a lid and incubated for 72 hours under constant light at room temperature. after 72 hours, the fluorescence (at 680 nm) of the suspension in each well was measured using a spectramax m2 plate reader, and the reduction in fluorescence compared with the negative control was converted into percent control of algal growth. each sample was visually compared to the negative control a well that was visually clearer than the negative control was scored as active.[0305] results presented in table 10 below shows control of the specified algae in fractions 5, 6, 7, 8, and 9. tests were run in two replicates and percent control was calculated as a reduction of fluorescence at 680 nm compared with the negative control. each sample was visually compared to the negative control a well that was visually clearer than the negative control was scored as active.table 10control of chlamydomonas reinhardtii by crude extract and fractions ofburkholderia sp. (mbi 206). micro l of sample persample750 micro l of algae percent inhibitionvisualsolvent blank22.50.00not active110.00not active50.00not activecrude extract22.597.10active1189.54active590.82activembi 206f122.5-74.47not active1146.47not active546.21not activembi 206f222.512.64not active11-214.35not active5-297.56not activembi 206f322.5-143.92not active11-740.16not active532.68not activembi 206f422.5-98.80not active11-155.41not active558.51not activembi 206f522.592.89active1179.45active571.60weakmbi 206f622.594.88active1196.33active586.45activembi 206f722.597.32active1198.96active597.89activembi 206f822.594.35active1132.17weak5-13.51not activembi 206f922.585.35active1196.49active597.73activembi 206f1022.550.30not active1148.54not active5-108.24not activembi 206f1122.5-121.50not active11-16.21not active536.46not active example 8 algicidal effect of crude extract and various fractions obtained from burkholderia sp. against p. subcapitata [0306] the crude extract as well as the fractions obtained from burkholderia sp. was tested for algicidal activity against a unicellular algal species (p. subcapitata). an increasing volume of pure ethanol solution derived by re-dissolving a known amount of material (10 mg/ml concentration) corresponding to each sample was added into wells of a 24-well polystyrene plate that has the specified algae growing in 750 micro liters of gorham's medium to determine the algicidal effect of sample (extract/fractions) on unicellular algae. each treatment was done in three replicates, and pure ethanol was used as a negative control. after mixing, the plate was closed with a lid and incubated for 48 hours under constant growth lights at room temperature. after 48 hours, the fluorescence (at 700 nm) of the suspension in each well was measured using a spectramax gemini xs plate reader, and the reduction in fluorescence compared with the un-treated control was converted into percent control of algal growth. results presented in table 11 below show excellent control of unicellular algae with fractions f5, f6 and f7 whereas no substantial algicidal effect was obtained with other samples.table 11algicidal effect of various samples obtained from burkholderia sp. thebioassay was run in three replicates using p. subcapitata as thetest organism.samplesample micro l percent controlresultsmbi206f150.0not active1033.9not active2058.2not activembi206f2535.7not active106.0not active2031.8not activembi206f3540.9not active1066.4not active2068.5not activembi206f4546.8not active1069.8weak2084.7activembi206f5549.9not active1071.5weak2095.4activembi206f6562.7not active1074.7weak2090.7activembi206f7540.1not active1088.6active2093.0activembi206f8536.8not active1050.0not active2065.9not activembi206f9566.3not active1040.7not active2051.8not activembi206f10526.8not active1027.5not active2032.9not activembi206f11525.9not active1032.8not active2039.2not activecrude extract545.6not active1069.6weak2070.0weaksolvent blank50.0not active100.0not active200.0not active example 9 control of chlamydomonas reinhardtii by purified compounds from burkholderia sp. fermentation broth [0307] purified compounds from burkholderia sp. fermentation broth was tested for algaicidal activity against chlamydomonas reinhardtii. an increasing volume of the purified compounds (20 mg/ml in ethanol) was added to a clear 48 well polystyrene plate with 750 micro liters of the specified algae growing. each treatment was done in two replicates and the solvent used as a negative control. the plate was closed with a lid and incubated for 72 hours under constant light at room temperature. after 72 hours the fluorescence (at 680 nm) of the suspension in each well was measured using a spectramax m2 plate reader, and the reduction in fluorescence compared with the negative control was converted into percent control of algal growth. each sample was visually compared to the negative control a well that was visually clearer than the negative control was scored as active. results presented in table 12 below shows control of the specified algae in samples containing templamide b (mw 537), fr901228 (mw 540), templazole a (mw 298), and f8h18 (mw 1080). tests were run in two replicates and percent. control was calculated as a reduction of fluorescence at 680 nm compared with the negative control. each sample was visually compared to the negative control a well that was visually clearer than the negative control was scored as active.table 12control of chlamydomonas reinhardtii by purified compounds fromburkholderia sp. fermentation broth (mbi 206). micro l of sampleper 750 micro l ofsamplealgae percent controlvisualsolvent blank22.50not active110not active50not activetemplamide b22.598.29620264active(mw 537)1199.34438783active595.05204335activefr901465 (mw22.5-3.887169203not active523)11-33.58351827not active5-86.58233289not activetemplamide a22.5-151.6466844not active(mw 555)11-21.16166036not active5-67.61183948not activefr901228 (mw22.598.71299647active540)1199.35532773active589.48079462activetemplazole b22.5-30.78693813not active(mw 258)1152.94712906not active5-102.0883867not activetemplazole a22.598.1523303active(mw 298)1198.72823743active599.18429591activetemplazole a22.595.71173214active(mw 298)1198.31330291active598.69251947activef8h18 (mw22.594.98474386active1080)1182.90378804active5-21.38764258not active templazole a was tested twice in this bioassay. example 10 control of scenedesmus quadricauda by heat-treated burkholderia sp. fermentation supernatant [0308] burkholderia sp. was grown in a fermentation broth as previously described. the broth was heat treated at the end of the fermentation to inactivate all cells. the cell free supernatant was tested for algaecide activity against scenedesmus quadricauda. an increasing volume of supernatant was added to a clear 48 well polystyrene plate with 750 micro liters of the specified algae growing. each treatment is done in two replicates and the blank growth medium used as a negative control. the plate is closed with a lid and incubated for 72 hours under constant light at room temperature. after 72 hours the fluorescence (at 680 nm) of the suspension in each well is measured using a spectramax m2 plate reader, and the reduction in fluorescence compared with the untreated control is converted into percent control of algal growth. results presented in table 13 below shows control of the specified algae. tests were run in two replicates and percent control was calculated as a reduction of fluorescence at 680 nm compared with the untreated control.table 13control of scenedesmus quadricauda by supernatant of heat killburkholderia sp. (mbi 206).materialvolume (micro l) percent inhibitionmbi 20600120522st hk1097.21347952tgai2099.361671613099.428442034099.507982315098.9013604510095.9474484 example 11 control of oscillatoria tenius by heat kill burkholderia sp. fermentation supernatant [0309] burkholderia sp. was grown in a fermentation broth as previously described. the broth was heat treated at the end of the fermentation to inactivate all cells. the cell free supernatant was tested for algaecide activity against oscillatoria tenius. an increasing volume of supernatant was added to a clear 48 well polystyrene plate with 750 micro l of the specified algae growing. each treatment is done in two replicates and the blank growth medium used as a negative control. the plate is closed with a lid and incubated for 72 hours under constant light at room temperature. after 72 hours the absorbance at 680 nm is measured in each well using a spectramax m2 plate reader, and the reduction in absorbance compared with the untreated control is converted into percent control of algal growth. results presented in table 14 below shows control of the specified algae. tests were run in two replicates and percent control was calculated as a reduction of absorbance at 680 nm compared with the untreated control.table 14control of oscillatoria tenius by supernatant of heat killburkholderia sp. (mbi 206).materialvolume (micro l) percent controlmbi 20600120522st hk106.177042802tgai2025.124131083010.565835344037.700865275045.4731362710036.96205601 example 13 efficacy of burkholderia sp. against two-spotted spidermites infesting marigold plants [0310] marigold, tagetes erecta, grown in 6? containers were infested with two-spotted spidermite, tetranychus urticae, by placing leaves extracted from host plant (cotton) onto the test plants. approximately ten (10) leaves with 30-40 spidermites present were placed on various parts of test plants for fourteen (14) days. test plants were individually caged following infestation to allow spidermite population to build. host leaves were removed from test plant. no pesticides were applied to test plants prior to study application. spray application was applied using a gen3 spray booth calibrated to 100 gpa. each replicate was individually caged immediately following application. cage description a wire tomato cage 30? heightx12? diameter, covered with antivirus insect screening. test plants received natural lighting for duration of trial. test plants were soil watered every twenty-four (24) hours as needed. plants were evaluated prior to application (pre-count), 3, 5 and 7 days after application. four leaves were randomly selected and harvested from each replicate equaling a 6 cm sq total surface area evaluated. actual count was recorded on live and dead two-spotted spidermite. burkholderia sp. showed slight activity against both tssm nymphs and adults. this activity shows potential for biopesticide formulations against tssm. the treatments also reduced the number of live mites observed on samples. this is compelling evidence that mbi206 shows potential for biopesticide formulations against tssm. example 14 efficacy of burkholderia sp. fermentation supernatant against two-spotted spidermites infesting marigold plants [0311] marigold plants grown in 6? containers were infested with two-spotted spidermite by placing leaves extracted from host plant (cotton) onto the test plants. eight to ten (8-10) leaves with approximately 30-40 two-spotted spidermite present were placed on various parts of test plants for fourteen (14) days. test plants were individually caged following infestation to allow mite population to build. host leaves were removed from test plant. no pesticides were applied to test plants prior to study application. plants were treated with either 100 percent supernatant or 10 percent supernatant (in water) spray application was applied to full coverage with no run-off using a disposable hand-sprayer. test plants were placed research greenhouse on a wire-mesh raised bench and arranged in a complete randomized block design. research greenhouse is monitored by procom, micro grow greenhouse system temperature control system. environmental conditions averaged high temperature 85f to low temperature of 72f during trial dates. average humidity levels ranged from 40 percent to 75 percent. test plants received natural lighting for duration of trial. test plants were soil watered every twenty-four (24) hours as needed. plants were evaluated prior to application (pre-count), 3, 5, 7 and 14 days after application. evaluations were taken on a 6 cm square total area per replicate. actual count was recorded on live/dead two-spotted spidermite nymph and live/dead two-spotted spidermite adult. example 14 efficacy of burkholderia sp. formulation (mbi 206) for control of two spotted spidermite (tsm) in strawberry-field data [0312] the efficacies of five traditional chemistry-derived and mbi 206 were evaluated for tsm control under field conditions. strawberry festival transplants were set in the field in plastic mulched beds, 13 inches high and 27 inches across the top, and with 4 ft bed spacing. overhead irrigation was applied for 10 days after setting to aid in establishment of the transplants. trickle irrigation was used for the remainder of the experiment. each 12.5-ft. plot consisted of 20 plants in two ten-plant rows per bed. plots were infested from a laboratory colony in four sessions with 10 to 20 motile tsm, per plant. each session accomplished the infestation of one block of the experiment. the experiment consisted of treatments of various rates and schedules of application of miticides, some combined with an adjuvant, and a non-treated check. treatments were replicated four times in a rcb design. savey and acramite treatments were applied before tsm densities reached threshold levels (6 january) the remainder of the treatment programs began 2 wks later. treatments were applied using a hand-held sprayer with a spray wand outfitted with a nozzle containing a 45-degree core and a number four disc.[0313] the sprayer was pressurized by co2, to 40 psi, and calibrated to deliver 100 gal per acre. pre-treatment samples were taken on day 1 and sampling continued weekly through 2 wks after the last application of treatments. samples consisted of ten randomly selected leaflets per plot and were collected from the middle one-third stratum of the plants. samples were transported to the laboratory where motile and egg tsm were brushed from the leaflets onto rotating sticky discs and counted on 1/10 of the disc surface to estimate average numbers per leaflet. distinctions could not be made between viable and non-viable eggs, thus total eggs were recorded. mbi 206 at the highest rate (3 gal/acre) shows decrease in the number of eggs at a level comparable to at least two of the chemical controls.table 15effects of various formulations on tsm egg productiontreatment/rateno. egg tsm/leafletformulationamt/acreday 1day 9day 16day 22day 30day 37day 44day 52day 58non-treated-15.51027.512.325.3122181.5587559bifenazate + blend of1lb.3.8660.88.320.532866.5alkyl arylpolyoxylkane ethers,free fatty acids anddimethyl polysiloxanenonionic spreader16.0fl. oz.6.815.511.816.831.5148.3114321525.35 percent fenpyroximate32fl. oz.11.312.83519.31124.517.849.8213ew5 percent fenpyroximate ec32fl. oz.9.311.812.312.5134.520.828.597.3hexythiazox6oz.28.515172271.5128.5281.5393.5mbi 206 + blend of1gal.12.3-201212.565.583.3292478alkyl arylpolyoxylkane ethers,free fatty acids anddimethyl polysiloxanembi 206 + blend of3gal.3.3-8.813.52154.372158301.3alkyl arylpolyoxylkane ethers,free fatty acids anddimethyl polysiloxane example 15 control of citrus rust mites (phyllocoptruta oleivora) on citrus under filed conditions [0314] mbi 206 (formulated broth of burkhoderia sp.) was sprayed on valencia sweet orange at 1, 2, and 3 gal/acre in combination with 0.25 percent v/v/ of li-700 (surfactant) and delivered in a volume of 100 gpa. a single treatment was delivered and compared to an untreated sample. mite counts were performed pre-treatment, and then at 1, 7, 10 and 14 days after treatment. mite counts were an average of 10 fruits per treatment per sampling point. a reduction in the number of mites present in the mbi 206 treatments was observed at 14 days after treatments with 1 and 2 gal/acre mbi 206 (approximately 6-8 mites per count), when compared to the untreated control

(approx. 16 mites per count). example 16 insecticidal (sucking contact) activity of templamide, fr901465 and fr901228 against milkweed bugs [0315] the insecticidal activity of the pure compounds templamide b (mbi 206 mw 537), fr 901465 (mbi 206 mw 523) and fr901228 (mbi 206 mw 540) were tested in a laboratory assay using a sucking contact bioassay system. the compounds were dissolved in 100 percent ethanol to concentrations of 1 mg/ml. individual 4th instar milkweed bugs, penultimate nymph, larvae were placed in 5c rubbermaid container with 2 sunflower seeds in each tub and 1 water cup (water in contact cup with cotton wick) into each tub. a hamilton micropipette was used to apply 1 micro l (1 drop) of compound onto abdomen of milkweed bugs (mwb) of each larvae. tubs were place into the rubbermaid container and cap with mesh lid. eight larvae per sample were treated. the assay was incubated at 25 degrees centigrade, 12 h light/12 h dark. larvae were scored at 4 and 7 day after application. all the three compounds exhibited contact activity against mwb, while not all insects died but many were clearly affected and unable to move. most of the mwb on day 7 had molted which suggests that the compounds may inhibit molting or affect normal mwb development. thus, fr 901465 provided a better (87.5 percent) control of milkweed bugs, than fr 901228 (mw 540) and templamide b (fig. 4). example 17 insecticidal activity of pure compounds against lygus hesperus late 2nd/early 3rd instar [0316] the insecticidal activity of the four compounds, templamide a, templamide b, fr901465 and fr901228 isolated from burkholderia were tested in a laboratory assay using a 12 well plate with treated green beans bioassay system. the compound was dissolved in 100 percent ethanol to concentrations of 1 mg/ml and 500 micro l of this sample was added to 3.5 ml of water to make a total volume of 4 ml containing 0.25 mg/ml concentration of the compound. green beans were washed earlier in bleach solution and then sat in water to rinse. beans were dried before using and then were cut with scissors to fit into wells of 12-well plate. with the help of forceps the beans were dunked into a 15 ml plastic falcon tube containing each treatment and then submerged in treatment for exactly one min. one bean part was put into each well and then individual late 2nd/early 3rd instar lygus hesperus, were placed in wells with help of brush. plate sealer was used to cover tray and hole poked into the plate sealer for aeration. the numbers of lygus/well were counted and plates were placed on brench top. larvae were scored at 24, 48 and 120 hours after application. based on the results presented in fig. 5, compound fr 901465, was found to be the most potent with mortality of 91.2 percent, followed by templamide with b 69.2 percent, and fr901228 with 51.7 percent. the templamide a was inactive in the lygus feeding bioassay. the positive control used in this testing was avid (avemectin) at the rate of 13 micro l/10 ml. example 18 nematicidal activity of fr901228 [0317] the pure sample of fr 901228 was tested using an in vitro 96-well plastic cell-culture plate bioassay. 15-20 nematodes in a 50 micro l water solution were exposed to 3 micro l of a 20 mg/ml solution of fr 901228 for a 24 hour period at 25 c. once the incubation period was completed, results were recorded based on a visual grading of immobility of the juvenile nematodes (j2's) in each well treated with compounds each treatment was tested in replicate of 4 wells. three controls are included in each trial 1 positive (1 percent avid) and 2 negative (dmso and water). trials (t1) was carried out using free living nematodes (fln) and trail (t2) was carried out using m. incognita nematodes, the samples were dissolved in 100 percent dmso. fr 901228 (mw 540) showed the excellent control with immobility of 75 percent against free living nematodes as compared to m. incognita with 75 percent immobility. microorganism deposit [0318] the following biological material has been deposited under the terms of the budapest treaty with the agricultural research culture collection (nrrl), 1815 n. university street, peoria, ill. 61604 usa, and given the following number:depositaccession numberdate of depositburkholderia sp. a396nrrl b-50319sep. 15, 2009[0319] the strain has been deposited under conditions that assure that access to the culture will be available during the pendency of this patent application to one determined by the commissioner of patents and trademarks to be entitled thereto under 37 c.f.r. 1.14 and 35 u.s.c. 122. the deposit represents a substantially pure culture of the deposited strain. the deposit is available as required by foreign patent laws in countries wherein counterparts of the subject application, or its progeny are filed. however, it should be understood that the availability of a deposit does not constitute a license to practice the subject invention in derogation of patent rights granted by government action.[0320] although this invention has been described with reference to specific embodiments, the details thereof are not to be construed as limiting, as it is obvious that one can use various equivalents, changes and modifications and still be within the scope of the present invention.[0321] various references are cited throughout this specification, each of which is incorporated herein by reference in its entirety. literature cited anderson, et al. 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Search 4: fn=(50961099 or 57466012 or 58695160 or 34356244 or 2153304 or 28628927 or 29966567 or 41744035 or 49470779 or 30353515) (Results 10)

Search 5: TAC=(Burkholderia and pesticidal) and CPC=(C12P17/187 OR C12P17/188) (Results 2)

1) Family number: 50961099 (US2012100236A)

Title: CHROMOBACTERIUM BIOACTIVE COMPOSITIONS AND METABOLITES

Abstract: Source: US2012100236A Provided are bioactive compounds and metabolites derived from Chromobacterium species culture responsible for controlling pests, compositions containing these compounds, methods for obtaining these compounds and methods of using these compounds and compositions for controlling pests.

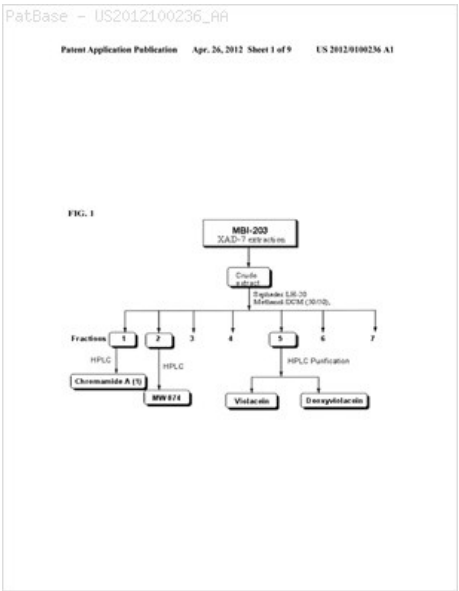
Classifications:

International (IPC 8-9): A01H5/00 A01H5/10 A01N A01N31/08 A01N33/06 A01N35/02 A01N43/16 A01N43/38 A01N43/56 A01N43/76 A01N43/86 A01N43/90 A01N53/02 A01N53/10 A01N61/00 A01N63/00 A01N63/02 A01N65/00 A01N65/12 A01P13/00 A01P17/00 A01P5/00 A01P7/00 A01P7/04 A61K35/00 A61K35/66 A61K35/74 C07C47/20 C07C49/20 C07C49/248 C07D209/54 C07D263/32 C07D263/34 C07D309/14 C07D401/04 C07D403/14 C07D407/06 C07D413/04 C07D413/06 C07D493/10 C07D498/14 C07D513/04 C07G99/00 C07K5/037 C07K5/062 C07K5/08 C07K7/06 C07K7/64 C12N1/20 C12N15/00 C12P1/04 C12P17/06 C12P17/14 C12P17/16 C12P21/04 C12P7/26 C12R1/01 C12R1/20 (Advanced/Invention);
C12R1/01 C12R1/20 (Advanced/Non-invention);
A01N (Subclass/Invention)

CPC: A01N43/76 A01N43/16 A01N43/86 A61K35/74 A61K2236/11 A61K2236/30 C07K5/0205 C12P17/188 C12P21/02 A01N43/90 A61K35/66 A01N43/74 C07D263/32 C07D263/34 C07D309/14 C07D407/06 C07D413/04 C07D413/06 C07D493/10 C07D498/14 C07D513/04 C12P17/06 C12P17/14 C12P17/16 C12R1/01 C07K7/64 A01N35/02 A01N35/04 A01N37/10 A01N37/46 A01N31/08 C12P7/26 C12R1/20 A01N63/02 A01N63/00 C12N1/20 C12P1/04

European: A01N43/90 C07K5/02B C12P17/18E C12P21/02

US: 424/780 424/780P 424/93.4 435/148 435/252.1 435/70.1 435/70.100S 435/71.2 504/100 504/101 504/117 504/225 504/270 504/284 504/292 514/231.5 514/374 514/375 514/4.5 514/452 514/459 514/678 530/321 530/323 530/323S 544/70 548/218 548/235 549/332 549/415



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AU2013205044 AA	20131003	AU20130205044	20130313
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Priority:

US20100308287P 20100225	US20100406569P 20101025	US20110280311 20111024
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Inventor(s): XING LIJUANUS ; RODRIGUEZ MARGARITAUS ; MARRONE PAMELAUS ; PAMELA G MARRONE ; KOIVUNEN MARJAUS ; CORDOVA KREYLOS ANA LUCIAUS ; ASOLKAR RATNAKARUS

Agent(s): BOECKH TOBIAS; BUCHANAN LUKE NOEL; YUKO; YING HORNG; AGRIS CHERYL H; SONEOKA YUKO

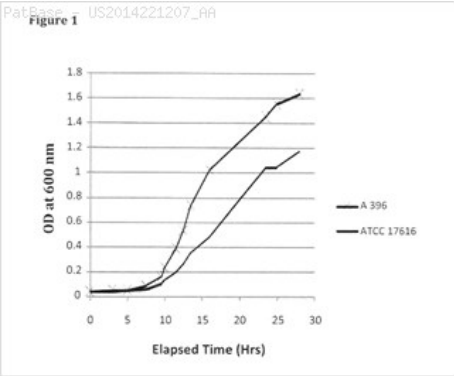
Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IR IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SA SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

2) Family number: 53182824 (US2014221207A)

Title: ISOLATED BACTERIAL STRAIN OF THE GENUS **BURKHOLDERIA** AND **PESTICIDAL** METABOLITES THEREFROM- FORMULATIONS AND USES

Abstract: Source: US2014221207A A species of **Burkholderia** sp with no known pathogenicity to vertebrates but with **pesticidal** activity (e.g., plants, algae, arachnids, insects, fungi, weeds and nematodes) as well as methods for controlling algae using said species of **Burkholderia**. Also provided are natural products derived from a culture of said species and methods of controlling algae and/or arachnids using said natural products.

Classifications:
International (IPC 8-9): A01C1/08 A01H5/00 A01N37/40 A01N43/06 A01N43/16 A01N43/26 A01N43/76 A01N43/90 A01N63/02 A01P13/00 A01P21/00 A01P3/00 A01P5/00 A01P7/00 A01P7/02 A01P7/04 A1N43/06 A1N43/26 A1P21/00 C12N1/20 C12N1/38 C12P1/04 C12P13/00 C12P7/62 C12P7/64 C12R1/01 (Advanced/Invention); C12N1/20 C12P1/04 C12P17/00 C12R1/01 (Advanced/Non-invention)
CPC: C12P17/02 C12P17/16 C12P21/00 C12R1/00 C12P7/62 C12P17/14 C12P17/187 C12P17/188 A01N43/90 A01N47/16 A01N63/00 C12R1/01 A01N37/40 A01N43/16 A01N43/76 C12P17/162 C12P7/6436 A01N63/02
US: 424/780 424/93.4 435/134 504/117 514/374 514/4.5 514/4.6 514/456 514/544



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Publication number	Publication date	Application number	Application date
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Priority:

US20110528149P 20110827 US20110528153P 20110827 WO2012US50807 20120814 US20120238467 20120814

Probable Assignee: MARRONE BIO INNOVATIONS INC

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Inventor(s): RATNAKAR ASOLKAR ; PAMELA G MARRONE

Agent(s): KJERRUMGAARD LARS BO; AGRIS CHERYL H

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PE PG PH PL PT QA RO RS RU RW SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

Ruth Rodriguez

Search history

Search 1: PN=(WO2013032693) (Results 1)

Search 2: [SP]: brief description of the figures [0098] fig. 1 shows the comparison of the growth rate of burkholderia a396 to burkholderia multivorans atcc 17616.[0099] fig. 2 shows the general scheme used to obtain fractions from formulated mbi-206.[0100] fig. 3 shows the general scheme used to obtain fractions and compounds from an mbi-206 culture.[0101] fig. 4 shows insecticidal (sucking) activities of tested compounds against milkweed bugs (oncopeltus fasciatus).[0102] fig. 5 shows insecticidal (feeding) activities of pure compounds against lygus hesperus. (Results 11)

Search 3: [SP]: technical field [0001] provided herein is a species of burkholderia sp with no known pathogenicity to vertebrates, such as mammals, fish and birds but pesticidal activity against plants, algae, insects, fungi, arachnids, such as mites and nematodes and formulations and compositions comprising said species. also provided are natural products, formulations and compositions derived from a culture of said species and methods of controlling algae and arachnids, such as mites, using said burkholderia and/or said natural products. background [0002] natural products are substances produced by microbes, plants, and other organisms. microbial natural products offer an abundant source of chemical diversity, and there is a long history of utilizing natural products for pharmaceutical purposes. one such compound is fr901228 isolated from chromobacterium and has been found to be useful as an antibacterial agent and antitumor agent (see, for example, ueda et al., u.s. pat. no. 7,396,665).[0003] however, secondary metabolites produced by microbes have also been successfully found to have uses for weed and pest control in agricultural applications (see, for example, nakajima et al. 1991 duke et al., 2000 lydon and duke, 1999 gerwick et al., u.s. pat. no. 7,393,812). microbial natural products have been also successfully developed into agricultural insecticides (see, for example, salama et al. 1981 thompson et al., 2000 krieg et al. 1983). sometimes, such natural products have been combined with chemical pesticides (see, for example, gottlieb, u.s. pat. no. 4,808,207). acaricides [0004] acaricides are compounds that kill mites (miticides) and ticks (ixodicides). this class of pesticides is large and includes antibiotics, carbamates, formamidine acaricides, pyrethroids, mite growth regulators, and organophosphate acaricides. besides chemical pesticides, diatomaceous earth and fatty acids can be used to control mites. they typically work through disruption of the cuticle, which dries out the mite. in addition, some essential oils such as peppermint oil, are used to control mites. in spite of the great variety of known acaricide compounds, mites remain a serious problem in agriculture because of the damage they cause to the crops. they can produce several generations during one season, which facilitates rapid development of resistance to the acaricide products used. hence, new pesticide products with new target sites and novel modes of action are critically needed. algicides [0005] algae come in many forms. these include: (1) microscopic, one-celled algae, filamentous algae that resemble hair, algae that grow in sheets and macroalgae that look like plants (2) algae that live inside the outer integument ("skin") or calcium shell of some corals, anemones, and other sessile invertebrates called zooxanthellae (3) very hard-to-remove little dots of green that sometimes grow on aquarium panels which also are not algae, but diatom or radiolarian colonies (microscopic, one-celled, animals with hard shells) with algae incorporated in their matrix.[0006] growth of algae in a small amount of water retained in the container over a significant period of time can be considerable, which is highly undesirable. as a result, algae can cause clogging of filters in water filtration devices, undesirable smells and appearance in pools, exhaustion of dissolved oxygen, and suffocation of fishes and shellfishes to death. in addition to being present in water, algae may also be present in industrial materials which are exposed to the weather and light, such as coatings containing organic film formers on mineral substrates, textile finishes, wood paints and also materials made of plastics.[0007] algae control can be divided into four categories: biological, mechanical, physical and chemical controls. a few pertinent facts hold for all methods of algae control. for example, turbo and astrea snails, some blennies, some tangs, among others are good grazers. snails are the most widely used scavengers, and generally the best choice. some parts of the country seem to favor the use of sea urchins, dwarf angels. the former die too easily and move the decor about, and the latter can be problematical with eating expensive invertebrates. other methods include functional protein skimmers, with or without ozone and ultraviolet sterilizers. these physical filters remove and destroy algae on exposure and help oxidize nutrients as the water is circulated. antibiotics may also be used. however, they treat the symptoms only without dealing with the cause(s) of the algae problem. the factors can contribute to water system being out of balance. copper, usually in the form of copper sulfate solution has been employed as an algicide, as well as a general epizootic parasite preventative. this metal is useful in treatment and quarantine tanks, dips and fish-only arrangements but it is persistent and toxic to all life, especially non-fish.burkholderia [0008] the burkholderia genus, beta -subdivision of the proteobacteria, comprises more than 40 species that inhabit diverse ecological niches (compant et al., 2008). the bacterial species in the genus burkholderia are ubiquitous organisms in soil and rhizosphere (coenye and vandamme, 2003 parke and gurian-sherman, 2001). traditionally, they have been known as plant pathogens, b. cepacia being the first one discovered and identified as the pathogen causing disease in onions (burkholder, 1950). several burkholderia species have developed beneficial interactions with their plant hosts (see, for example, cabballero-mellado et al., 2004, chen et al., 2007). some burkholderia species have also been found to be opportunistic human pathogens (see, for example, cheng and currie, 2005 and nierman et al., 2004). additionally, some burkholderia species have been found to have potential as biocontrol products (see for example, burkhead et al., 1994 knudsen et al., 1987 jansiewicz et al., 1988 gouge et al., us patent application no. 2003/0082147 parke et al., u.s. pat. no. 6,077,505 casida et al., u.s. pat. no. 6,689,357 jeddeloh et al., wo2001055398 zhang et al., u.s. pat. no. 7,141,407). some species of in this genus have been effective in bioremediation to decontaminate polluted soil or groundwater (see, for example, leahy et al. 1996). further, some burkholderia species have been found to secrete a variety of extracellular enzymes with proteolytic, lipolytic and hemolytic activities, as well as toxins, antibiotics, and siderophores (see, for example, ludovic et al., 2007 nagamatsu, 2001).[0009] pct/us2011/026016 discloses a burkholderia species, particularly burkholderia a396 and compounds derived from said species with no known pathogenicity to vertebrates with activity against plants, insects, fungi and nematodes. oxazoles, thiazoles and indoles [0010] oxazoles, thiazoles and indoles are widely distributed in plants, algae, sponges, and microorganisms. a large number of natural products contain one or more of the five-membered oxazole, thiazole and indole nucleus/moieties. these natural products exhibit a broad spectrum of biological activity of demonstrable therapeutic value. for example, bleomycin a (tomohisa et al.), a widely prescribed anticancer drug, effects the oxidative degradation of dna and uses a bithiazole moiety to bind its target dna sequences (vanderwall et al., 1997). bacitracin (ming et al., 2002), a thiazoline-containing peptide antibiotic, interdicts bacterial cell wall new biosynthesis by complexation with c55-bactoprenolpyrophosphate. thiangazole (kunze et al., 1993) contains a tandem array of one oxazole and three thiazolines and exhibits antiviral activity (jansen et al., 1992). yet other oxazole/thiazole-containing natural products such as thiostrepton (anderson et al., 1970) and ge2270a (selva et al., 1997) inhibit translation steps in bacterial protein synthesis. more than 1000 alkaloids with the indole skeleton have been reported from microorganisms. one-third of these compounds are peptides with masses beyond 500 da where the indole is tryptophan derived. the structural variety of the remaining two-thirds is higher, and their biological activity seems to cover a broader range, including antimicrobial, antiviral, cytotoxic, insecticidal, antithrombotic, or enzyme inhibitory activity. brief summary [0011] provided herein is an isolated strain of a non-burkholderia cepacia, non-burkholderia plantari, non-burkholderia gladioli, burkholderia sp. which has the following characteristics: (a) has a 16rrna gene sequence comprising a forward sequences having at least 99.5 percent identity to the sequences set forth in seq id no:8, 11 and 12 and a reverse sequence having at least 99.5 percent identity to seq id no:9, 10, 13-15(b) has pesticidal, in particular, herbicidal, algicidal, acaricidal, insecticidal, fungicidal and nematicidal activity(c) produces at least one of the compounds selected from the group consisting of: (i) a compound having the following properties: (a) a molecular weight of about 525-555 as determined by liquid chromatography/mass spectroscopy (lc/ms) (b) 1h nmr values of 6.22, 5.81, 5.69, 5.66, 5.65, 4.64, 4.31, 3.93, 3.22, 3.21, 3.15, 3.10, 2.69, 2.62, 2.26, 2.23. 1.74, 1.15, 1.12, 1.05, 1.02 (c) has 13c nmr values of 172.99, 172.93, 169.57, 169.23, 167.59, 130.74, 130.12, 129.93, 128.32, 73.49, 62.95, 59.42, 57.73, 38.39, 38.00, 35.49, 30.90, 30.36, 29.26, 18.59, 18.38, 18.09, 17.93, 12.51 and (c) an high pressure liquid chromatography (hplc) retention time of about 10-15 minutes, on a reversed phase c-18 hplc column using a water:acetonitrile (ch3cn) gradient(ii) a compound having an oxazolyl-indole structure comprising at least one indole moiety, at least one oxazole moiety, at least one substituted alkyl group and at least one carboxylic ester group at least 17 carbons and at least 3 oxygen and 2 nitrogens(iii) a compound having an oxazolyl-benzyl structure comprising at least one benzyl moiety, at least one oxazole moiety, at least one substituted alkyl group and at least one amide group at least 15 carbons and at least 2 oxygen and 2 nitrogens(iv) a compound having at least one ester, at least one amide, at least three methylene groups, at least one tetrahydropyranose moiety and at least three olefinic double bonds, at least six methyl groups, at least three hydroxyl groups, at least twenty five carbons and at least eight oxygen and one nitrogen and(d) is non-pathogenic (non-infectious) to vertebrate animals, such as mammals, birds and fish(e) is susceptible to kanamycin, chloramphenicol, ciprofloxacin, piperacillin, imipenem, and a combination of sulphamethoxazole and trimethoprim and(f) contains the fatty acids 16:0, cyclo 17:0, 16:0 3-oh, 14:0, cyclo 19:0 ?8c, 18:0.[0022] in a particular embodiment, the strain has the identifying characteristics of a burkholderia a396 strain (nrrl accession no. b-50319).[0023] in a particular embodiment, the first substance is a supernatant. in yet even a more particular embodiment, the supernatant is a cell-free supernatant.[0024] also provided is a combination, particularly a composition or formulation comprising[0025] (a) a first substance selected from the group consisting of a pure culture, cell fraction or supernatant derived from the burkholderia strain set forth above or extract thereof for use optionally as a pesticide and[0026] (b) optionally at least one of a carrier, diluent, surfactant, adjuvant, or chemical or biological pesticide (e.g., algicide, acaricide, herbicide, fungicide, insecticide, nematocide and particularly, algicide or acaricide (e.g., miticide)). in a related aspect, provided herein is a seed coated with said combination or composition.[0027] in a particular embodiment, the composition or formulation may comprise:[0028] (a) a first substance selected from the group consisting of a pure culture, cell fraction or supernatant derived from the burkholderia strain set forth above or extract thereof for use optionally as a pesticide[0029] (b) fatty acids 16:0, cyclo 17:0, 16:0 3-oh, 14:0, cyclo 19:0 ?8c, 18:0, c1-c7 paraben, c2-c17 alcohol and detergent and[0030] (c) optionally another substance wherein said other substance is a pesticide (e.g., fungicide, insecticide, algicide, acaricide (e.g., miticide), herbicide, nematocide).[0031] in a particular embodiment, the c1-c7 aliphatic paraben is present in the amount of about 0.01-5 percent, the c2-c17 alcohol is present in the amount of about 0.00-10 percent and the detergent is present in the amount of about 0.001-10 percent.[0032] also provided are the pesticidal substances derived from the formulation set forth above, combinations comprising said pesticidal subtances and another chemical or biological pesticide and methods for producing these pesticidal substances. in a particular embodiment, these pesticidal substances comprise at least one of the following characteristics:[0033] (a) has pesticidal properties and in particular, herbicidal, insecticidal, nematicidal, and fungicidal properties[0034] (b) has a molecular weight of about 210-240 and more particularly, 222 as determined by liquid chromatography/mass spectroscopy (lc/ms)[0035] (e) has 1h nmr values of delta 7.90, 6.85, 4.28, 1.76, 1.46, 1.38, 1.37, 0.94[0036] (d) has 13c nmr values of delta 166.84, 162.12, 131.34 (2c), 121.04, 114.83 (2c), 64.32, 31.25, 28.43, 25.45, 22.18. 12.93[0037] (e) has an high pressure liquid chromatography (hplc) retention time of about 15-20 minutes, more specifically about 17 minutes and even more specifically about 17.45 min on a reversed phase c-18 hplc (phenomenex, luna 5 micro c18(2) 100 a, 100x4.60 mm) column using a water:acetonitrile (ch3cn) with a gradient solvent system (0-20 min 90-0 percent aqueous ch3cn, 20-24 min 100 percent ch3cn, 24-27 min 0-90 percent aqueous ch3cn, 27-30 min 90 percent aqueous ch3cn) at 0.5 ml/min flow rate and uv detection of 210 nm[0038] (f) the 13c nmr spectrum exhibited 13 discrete carbon signals which were attributed to one methyl, five methylene carbons, four methines, and three quaternary carbons[0039] (g) has a molecular formula of c13h18o3 which was determined by interpretation of the esims and nmr data analysis[0040] (h) has uv absorption bands between about 210-450 nm and most particularly at about 248 nm.[0041] also provided are compounds having the structure shown below:[ftimg=60402135][0042] wherein[0043] x, is independently -o, -nr, or -s, wherein r is h or c1-c10 alkyl r1, r2, r3, r4, r5, and r6 are each independently h, alkyl, substituted alkyl, alkenyl, substituted alkenyl, alkynyl, substituted alkynyl, aryl, substituted aryl, heteroaryl, substituted heteroaryl, heterocyclic, substituted heterocyclic, cycloalkyl, substituted cycloalkyl, alkoxy, substituted alkoxy, thioalkyl, substituted thioalkyl, hydroxy, halogen, amino, amido, carboxyl, -c(o)h, acyl, oxyacyl, carbamate, sulfonyl, sulfonamide, or sulfuryl.[0044] in particular, the substance may have the structure[ftimg=60402136][0045] wherein[0046] x, is independently -o, -nr, or -s, wherein r is h or c1-c10 alkyl r1, r2, r3, r4, r5, and r6 are each independently h, alkyl, substituted alkyl, alkenyl, substituted alkenyl, alkynyl, substituted alkynyl, aryl, substituted aryl, heteroaryl, substituted heteroaryl, heterocyclic, substituted heterocyclic, cycloalkyl,

substituted cycloalkyl, alkoxy, substituted alkoxy, thioalkyl, substituted thioalkyl, hydroxy, halogen, amino, amido, carboxyl, -c(o)h, acyl, oxyacyl, carbamate, sulfonyl, sulfonamide, or sulfuryl.[0047] in a more particular embodiment, the compound is butyl parben with the following structure:[ftimg=60402137][0048] in a more particular embodiment, the compound is hexyl parben with the following structure:[ftimg=60402138][0049] in a more particular embodiment, the compound is octyl parben with the following structure:[ftimg=60402139][0050] the pesticidal substance(s) derived from the formulation set forth above may obtained by [0051] (a) providing the formulation set forth above[0052] (b) incubating or storing the formulation provided for a sufficient time (e.g., between about 1 day to about 6 months) and at a sufficient temperature (e.g., between about 3c to about 50 c) to produce the pesticidal substance(s) and[0053] (c) isolating the pesticidal substance.[0054] in a related aspect, disclosed is a method for modulating proliferation and/or growth of a pest including but not limited to insect, fungi, weeds, nematode, arachnid, algae and particularly, algae, arachnid (e.g., mites. ticks) comprising applying to a location where modulation of proliferation and/or growth of a pest is desired an amount of:[0055] (i)(a) at least one or more substances selected from the group consisting of a substantially pure cell culture, cell fraction, supernatant derived from the burkholderia strain set forth above or extract thereof and (b) optionally another substance, wherein said substance is a pesticide, or[0056] (ii) the combination, composition or formulation or pesticidal substances derived from said formulation set forth above, effective to modulate proliferation and/or growth of a pest at said location.[0057] disclosed herein are isolated compounds which are optionally obtainable or derived from burkholderia species, or alternatively, organisms capable of producing these compounds that can be used to control various pests, particularly plant phytopathogenic pests, examples of which include but are not limited to insects, nematodes, bacteria, fungi. these compounds may also be used as herbicides, acaricides or algicides. [0058] in particular, the isolated pesticidal compounds may include but are not limited to:[0059] (a) a compound having the following properties: (i) a molecular weight of about 525-555 as determined by liquid chromatography/mass spectroscopy (lc/ms) (ii) 41 nmr values of 6.22, 5.81, 5.69, 5.66, 5.65, 4.64, 4.31, 3.93, 3.22, 3.21, 3.15, 3.10, 2.69, 2.62, 2.26, 2.23. 1.74, 1.15, 1.12, 1.05, 1.02 (iii) has 13c nmr values of 172.99, 172.93, 169.57, 169.23, 167.59, 130.74, 130.12, 129.93, 128.32, 73.49, 62.95, 59.42, 57.73, 38.39, 38.00, 35.49, 30.90, 30.36, 29.26, 18.59, 18.38, 18.09, 17.93, 12.51 and (iv) an high pressure liquid chromatography (hplc) retention time of about 10-15 minutes, on a reversed phase c-18 hplc column using a water:acetonitrile (ch3cn) gradient[0060] (b) a compound having an oxazolyl-indole structure comprising at least one indole moiety, at least one oxazole moiety, at least one substituted alkyl group and at least one carboxylic ester group at least 17 carbons and at least 3 oxygen and 2 nitrogens[0061] (c) a compound having an oxazolyl-benzyl structure comprising at least one benzyl moiety, at least one oxazole moiety, at least one substituted alkyl group and at least one amide group at least 15 carbons and at least 2 oxygen and 2 nitrogens[0062] (d) a compound having at least one ester, at least one amide, at least three methylene groups, at least one tetrahydropyranose moiety and at least three olefinic double bonds, at least six methyl groups, at least three hydroxyl groups, at least twenty five carbons and at least eight oxygen and one nitrogen and[0063] (e) a compound having at least one ester, at least one amide, an epoxide methylene group, at least one tetrahydropyranose moiety, at least three olefinic double bonds, at least six methyl groups, at least three hydroxyl groups, at least 25 carbons, at least 8 oxygens and at least 1 nitrogen. [0064] in a particular embodiment, the isolated compounds may include but are not limited to:[0065] (a) a compound having an oxazolyl-indole structure comprising at least one indole moiety, at least one oxazole moiety, at least one substituted alkyl group, at least one carboxylic ester group, at least 17 carbons, at least 3 oxygens and at least 2 nitrogens and which has at least one of the following: (i) a molecular weight of about 275-435 (ii) 1h nmr delta values at 8.44, 8.74, 8.19, 7.47, 7.31, 3.98, 2.82, 2.33, 1.08 (iii) 13c nmr values of delta 163.7, 161.2, 154.8, 136.1, 129.4, 125.4, 123.5, 123.3, 121.8, 121.5, 111.8, 104.7, 52.2, 37.3, 28.1, 22.7, 22.7 (iv) an high pressure liquid chromatography (hplc) retention time of about 10-20 minutes on a reversed phase c-18 hplc column using a water:acetonitrile (ch3cn) with a gradient solvent system and uv detection of 210 nm (v) uv absorption bands at about 226, 275, 327 nm.[0066] (b) a compound having an oxazolyl-benzyl structure comprising at least one benzyl moiety, at least one oxazole moiety, at least one substituted alkyl group and at least one amide group at least 15 carbons and at least 2 oxygens, at least 2 nitrogens and at least one of the following characteristics: (i) a molecular weight of about 240-290 as determined by liquid chromatography/mass spectroscopy (lc/ms) (ii) 1h nmr delta values at about 7.08, 7.06, 6.75, 3.75, 2.56, 2.15, 0.93, 0.93 (iii) 13c nmr values of delta 158.2, 156.3, 155.5, 132.6, 129.5, 129.5, 127.3, 121.8, 115.2, 115.2, 41.2, 35.3, 26.7, 21.5, 21.5 (iv) a high pressure liquid chromatography (hplc) retention time of about 6-15 minutes, on a reversed phase c-18 hplc column using a water:acetonitrile (ch3cn) gradient and (v) uv absorption bands at about 230, 285, 323 nm[0067] (c) a non-epoxide compound comprising at least one ester, at least one amide, at least three methylene groups, at least one tetrahydropyranose moiety and at least three olefinic double bonds, at least six methyl groups, at least three hydroxyl groups, at least twenty five carbons, at least eight oxygens and one nitrogen and at least one of the following characteristics: (i) a molecular weight of about 530-580 as determined by liquid chromatography/mass spectroscopy (lc/ms) (ii) 1h nmr values of delta 6.40, 6.39, 6.00, 5.97, 5.67, 5.54, 4.33, 3.77, 3.73, 3.70, 3.59, 3.47, 3.41, 2.44, 2.35, 2.26, 1.97, 1.81, 1.76, 1.42, 1.37, 1.16, 1.12, 1.04 (iii) 13c nmr values of delta 173.92, 166.06, 145.06, 138.76, 135.71, 129.99, 126.20, 123.35, 99.75, 82.20, 78.22, 76.69, 71.23, 70.79, 70.48, 69.84, 60.98, 48.84, 36.89, 33.09, 30.63, 28.55, 25.88, 20.37, 18.11, 14.90, 12.81, 9.41 (iv) a high pressure liquid chromatography (hplc) retention time of about 7-12 minutes, on a reversed phase c-18 hplc column using a water:acetonitrile (ch3cn) with a gradient solvent system and uv detection of 210 nm (v) a molecular formula of c28h45no10 which was determined by interpretation of the esims and nmr data analysis (vi) uv absorption bands between about 210-450 nm[0068] (d) a compound comprising (i) at least one ester, at least one amide, an epoxide methylene group, at least one tetrahydropyranose moiety and at least three olefinic double bonds, at least six methyl groups, at least three hydroxyl groups, at least 25 carbons, at least 8 oxygens and at least 1 nitrogen, (ii) 13c nmr values of delta174.03, 166.12, 143.63, 137.50, 134.39, 128.70, 126.68, 124.41, 98.09, 80.75, 76.84, 75.23, 69.87, 69.08, 68.69, 68.60, 48.83, 41.07, 35.45, 31.67, 29.19, 27.12, 24.55, 19.20, 18.95, 13.48, 11.39, 8.04, (iii) a molecular formula of c28h43no9 and at least one of: (a) 1h nmr 6 values at about 6.41, 6.40, 6.01, 5.97, 5.67, 5.55, 4.33, 3.77, 3.75, 3.72, 3.64, 3.59, 3.54, 3.52, 2.44, 2.34, 2.25, 1.96, 1.81, 1.76, 1.42, 1.38, 1.17, 1.12, 1.04 (b) an high pressure liquid chromatography (hplc) retention time of about 6-15 minutes, on a reversed phase c-18 hplc column using a water:acetonitrile (ch3cn) gradient (c) uv absorption band between about 210-450 nm and most particularly at about 234 nm.[0069] in a more particular embodiment, provided are compounds including but not limited to:[0070] (a) a compound having the structure ##str001##[ftimg=60402140] or a pesticidally acceptable salt or steriosomers thereof, wherein m is 1, 2, 3 or 4 n is 0, 1, 2, or 3 p and q are independently 1 or 2 x is o, nh or nr r1, r2 and r3 are the same or different and independently an amino acid side-chain moiety or an amino acid side-chain derivative and r is a lower chain alkyl, aryl or arylalkyl moiety[0071] (b) a compound having the structure ##str002##[ftimg=60402141] wherein x, y and z are each independently -o, -nr1, or -s, wherein r1 is -h or c1-c10 alkyl r1, r2 and m are each independently-h, alkyl, substituted alkyl, alkenyl, substituted alkenyl, alkynyl, substituted alkynyl, aryl, substituted aryl, heteroaryl, substituted heteroaryl, heterocyclic, substituted heterocyclic, cycloalkyl, substituted cycloalkyl, alkoxy, substituted alkoxy, thioalkyl, substituted thioalkyl, hydroxy, halogen, amino, amido, carboxyl, -c(o)h, acyl, oxyacyl, carbamate, sulfonyl, sulfonamide, or sulfuryl and "m" may be located anywhere on the oxazole ring[0072] (c) a compound having the structure ##str002a##.[ftimg=60402142] wherein r1 is -h or c1-c10 alkyl r2 is an alkyl ester[0073] (d) a compound having the structure ##str003##[ftimg=60402143] wherein: x and y are each independently -oh, -nr1, or -s, wherein r1 is -h or c1-c10 alkyl r1, r2 and m, a substituent on the oxazole ring, are each independently -h, alkyl, substituted alkyl, alkenyl, substituted alkenyl, alkynyl, substituted alkynyl, aryl, substituted aryl, heteroaryl, substituted heteroaryl, heterocyclic, substituted heterocyclic, cycloalkyl, substituted cycloalkyl, alkoxy, substituted alkoxy, thioalkyl, substituted thioalkyl, hydroxy, halogen, amino, amido, carboxyl, -c(o)h, acyl, oxyacyl, carbamate, sulfonyl, sulfonamide, or sulfuryl.[0074] (e) a compound having the structure ##str003a##[ftimg=60402144] wherein r1 is -h or c1-c10 alkyl[0075] (f) a compound having the structure ##str004a##[ftimg=60402145] wherein x, y and z are each independently -o, -nr, or -s, wherein r is h or c1-c10 alkyl r1, r2, r3, r4, r5, r6, r7, r8, r9, r10, r11, r12, and r13 are each independently h, alkyl, substituted alkyl, alkenyl, substituted alkenyl, alkynyl, substituted alkynyl, aryl, substituted aryl, heteroaryl, substituted heteroaryl, heterocyclic, substituted heterocyclic, cycloalkyl, substituted cycloalkyl, alkoxy, substituted alkoxy, thioalkyl, substituted thioalkyl, hydroxy, halogen, amino, amido, carboxyl, -c(o)h, acyl, oxyacyl, carbamate, sulfonyl, sulfonamide, or sulfuryl.[0076] (g) a compound having the structure ##str004b##[ftimg=60402146] wherein r1, r2, r3, r4, r5, r6, r7, r8, r9, r10, r11, r12, and r13 are each independently h, alkyl, substituted alkyl, alkenyl, substituted alkenyl, alkynyl, substituted alkynyl, aryl, substituted aryl, heteroaryl, substituted heteroaryl, heterocyclic, substituted heterocyclic, cycloalkyl, substituted cycloalkyl, alkoxy, substituted alkoxy, thioalkyl, substituted thioalkyl, hydroxy, halogen, amino, amido, carboxyl, -c(o)h, acyl, oxyacyl, carbamate, sulfonyl, sulfonamide, or sulfuryl[0077] (h) a compound having the structure ##str004c##[ftimg=60402147] wherein r1, r2, r3, r4, r5, r6, r7, r8, r11, are each independently h, alkyl, substituted alkyl, alkenyl, substituted alkenyl, alkynyl, substituted alkynyl, aryl, substituted aryl, heteroaryl, substituted heteroaryl, heterocyclic, substituted heterocyclic, cycloalkyl, substituted cycloalkyl, alkoxy, substituted alkoxy, thioalkyl, substituted thioalkyl, hydroxy, halogen, amino, amido, carboxyl, -c(o)h, acyl, oxyacyl, carbamate, sulfonyl, sulfonamide, or sulfuryl[0078] (i) a compound having the structure ##str005##[ftimg=60402148] wherein x and y are each independently -oh, -nr1, or -s, wherein r1, r2 are each independently -h, alkyl (e.g., c1-c10 alkyl), substituted alkyl, alkenyl, substituted alkenyl, alkynyl, substituted alkynyl, aryl, substituted aryl, heteroaryl, substituted heteroaryl, heterocyclic, substituted heterocyclic, cycloalkyl, substituted cycloalkyl, alkoxy, substituted alkoxy, thioalkyl, substituted thioalkyl, hydroxy, halogen, amino, amido, carboxyl, -c(o)h, acyl, oxyacyl, carbamate, sulfonyl, sulfonamide, or sulfuryl[0079] (j) a compound having the structure ##str006a##[ftimg=60402149] wherein x, y and z are each independently -o, -nr, or -s, wherein r is h or c1-c10 alkyl r1, r2, r3, r4, r5, r6, r7, r8, r11, r12, and r13 are each independently h, alkyl, substituted alkyl, alkenyl, substituted alkenyl, alkynyl, substituted alkynyl, aryl, substituted aryl, heteroaryl, substituted heteroaryl, heterocyclic, substituted heterocyclic, cycloalkyl, substituted cycloalkyl, alkoxy, substituted alkoxy, thioalkyl, substituted thioalkyl, hydroxy, halogen, amino, amido, carboxyl, -c(o)h, acyl, oxyacyl, carbamate, sulfonyl, sulfonamide, or sulfuryl.[0080] in a most particular embodiment, the compounds may include but are not limited to[0081] (i) templazole a[0082] (ii) templazole b[0083] (iii) templamide a[0084] (iv) templamide b[0085] (v) fr901228[ftimg=60402150][ftimg=60402151][ftimg=60402152][ftimg=60402153][0086] (xl) fr901465[0087] (xli) f8h17, an active compound from fraction f8, which has been assigned a molecular weight of 1080 based on the molecular ion peak at 1081.75 (m+h) in positive esi mode and further confirmed by the negative esims with base peak at 1079.92. this compound showed uv absorption at 234 nm.[0088] in a related aspect, disclosed is a method for modulating proliferation and/or growth of a pest (e.g., algae, arachnid, nematode, insect, fungus) comprising applying to a location where modulation of proliferation and/or growth of a pest (e.g., algae, arachnid, nematode, insect, fungus) is desired an amount of (i) (a) the isolated compounds set forth above and (b) optionally another substance, wherein said substance is an algicide or(ii) the composition or combination set forth above in an amount effective to modulate proliferation and/or growth of pest at said location. [0091] in another related aspect, disclosed is a method for modulating proliferation and/or growth of algae and/or modulating pest infestation in a plant and/or a method for modulating emergence and/or growth of monocotyledonous, sedge or dicotyledonous weeds comprising applying to a location where modulation of proliferation and/or growth of algae and/or modulation of infestation of an arachnid and/or modulation of emergence and/or growth of said weed is desired an amount of[0092] (a) the formulation set forth above or pesticidally effective substance derived therefrom[0093] (b) the combination set forth above[0094] (c) templamide a[0095] (d) templamide b[0096] (e) fr901465[0097] (f) fr901228 effective to modulate said proliferation and/or growth of algae and/or pest infestation and/or emergence or growth of monocotyledonous, sedge or dicotyledonous weeds at said location. the nematode and/or insect infestation is modulated with templamide a, templamide b, fr901465 and/or fr901228. in a more particular embodiment, infestation of insects, specifically oncopeltus sp. (e.g., o. fasciatus) and/or lygus sp. and/or free living nematodes and/or parasitic nematodes (e.g., m. incognita) are modulated. brief description of the figures [0098] fig. 1 shows the comparison of the growth rate of burkholderia a396 to burkholderia multivorans atcc 17616.[0099] fig. 2 shows the general scheme used to obtain fractions from formulated mbi-206.[0100] fig. 3 shows the general scheme used to obtain fractions and compounds from an mbi-206 culture.[0101] fig. 4 shows insecticidal (sucking) activities of tested compounds against milkweed bugs (oncopeltus fasciatus).[0102] fig. 5 shows insecticidal (feeding) activities of pure compounds against lygus hesperus. detailed description of embodiments [0103] while the compositions and methods heretofore are susceptible to various modifications and alternative forms, exemplary embodiments will herein be described in detail. it should be understood, however, that there is no intent to limit the invention to the particular forms disclosed, but on the contrary, the intention is to cover all modifications, equivalents, and alternatives falling within the spirit and scope of the invention as defined by the appended[0104] where a range of values is provided, it is understood that each intervening value, to the tenth of the unit of the lower limit unless the context clearly dictates otherwise, between the upper and lower limit of that range and any other stated or intervening value in that stated range, is included therein. smaller ranges are also included. the upper and lower limits of these smaller ranges are also included therein, subject to any specifically excluded limit in the stated range.[0105] unless defined otherwise, all technical and scientific terms used herein have the same meaning as commonly understood by one of ordinary skill in the art to which this invention belongs. although any methods and materials similar or equivalent to those described herein can also be used in the practice or testing of the present invention, the preferred methods and materials are now described.[0106] it must be noted that as used herein and in the appended claims, the singular forms "a," "and" and "the" include plural references unless the context clearly dictates otherwise.[0107] as defined herein, "derived from" means directly isolated or obtained from a particular source or alternatively having identifying characteristics of a substance or organism isolated or obtained from a particular source.[0108] as defined herein, an "isolated compound" is essentially free of other compounds or substances, e.g., at least about 20 percent pure, preferably at least about 40 percent pure, more preferably about 60 percent pure, even more preferably about 80 percent pure, most preferably about 90 percent pure, and even most preferably about 95 percent pure, as determined by analytical methods, including but not limited to chromatographic methods, electrophoretic methods.[0109] as used herein, the term "alkyl" refers to a monovalent straight or branched chain hydrocarbon group having from one to about 12 carbon atoms, including methyl, ethyl, n-propyl, isopropyl, n-butyl, isobutyl, tert-butyl, n-hexyl, and the like.[0110] as used herein, "substituted alkyl" refers to alkyl groups further bearing one or more substituents selected from hydroxy, alkoxy, mercapto, cycloalkyl, substituted cycloalkyl, heterocyclic, substituted heterocyclic, aryl, substituted aryl, heteroaryl, substituted heteroaryl, aryloxy, substituted aryloxy, halogen, cyano, nitro, amino, amido, -c(o)h, acyl, oxyacyl, carboxyl, sulfonyl, sulfonamide, sulfuryl, and the like.[0111] as used herein, "alkenyl" refers to straight or branched chain hydrocarbyl groups having one or more carbon-carbon double bonds, and having in the range of about 2 up to 12 carbon atoms, and "substituted alkenyl" refers to alkenyl groups further bearing one or

more substituents as set forth above.[0112] as used herein, "alkynyl" refers to straight or branched chain hydrocarbyl groups having at least one carbon-carbon triple bond, and having in the range of about 2 up to 12 carbon atoms, and "substituted alkynyl" refers to alkynyl groups further bearing one or more substituents as set forth above.[0113] as used herein, "aryl" refers to aromatic groups having in the range of 6 up to 14 carbon atoms and "substituted aryl" refers to aryl groups further bearing one or more substituents as set forth above.[0114] as used herein, "heteroaryl" refers to aromatic rings containing one or more heteroatoms (e.g., n, o, s, or the like) as part of the ring structure, and having in the range of 3 up to 14 carbon atoms and "substituted heteroaryl" refers toheteroaryl groups further bearing one or more substituents as set forth above.[0115] as used herein, "alkoxy" refers to the moiety -o-alkyl-, wherein alkyl is as defined above, and "substituted alkoxy" refers to alkoxyl groups further bearing one or more substituents as set forth above.[0116] as used herein, "thioalkyl" refers to the moiety-s-alkyl-, wherein alkyl is as defined above, and "substituted thioalkyl" refers to thioalkyl groups further bearing one or more substituents as set forth above.[0117] as used herein, "cycloalkyl" refers to ring-containing alkyl groups containing in the range of about 3 up to 8 carbon atoms, and "substituted cycloalkyl" refers to cycloalkyl groups further bearing one or more substituents as set forth above.[0118] as used herein, "heterocyclic", refers to cyclic (i.e., ring-containing) groups containing one or more heteroatoms (e.g., n, o, s, or the like) as part of the ring structure, and having in the range of 3 up to 14 carbon atoms and "substituted heterocyclic" refers to heterocyclic groups further bearing one or more substituent's as set forth above.[0119] as used herein "algae" refers to any of various chiefly aquatic, eukaryotic, photosynthetic organisms, ranging in size from single-celled forms to the giant kelp. the term may further refer to photosynthetic protists responsible for much of the photosynthesis on earth. as a group, the algae are polyphyletic. accordingly, the term may refer to any protists considered to be algae from the following groups, alveolates, chloraraachniophytes, cryptomonads, euglenids, glaucophytes, haptophytes, red algae such as rhodophyta, stramenopiles, and viridaeplantae. the term refers to the green, yellow-green, brown, and red algae in the eukaryotes. the term may also refer to the cyanobacteria in the prokaryotes. the term also refers to green algae, blue algae, and red algae.[0120] as used herein "algicide" refers to one or more agents, compounds and/or compositions having algaestatic and/or algaecidal activity.[0121] as used herein "algicidal" as used herein means the killing of algae.[0122] as used herein "algistatic" as used herein means inhibiting the growth of algae, which can be reversible under certain conditions. the burkholderia strain [0123] the burkholderia strain set forth herein is a non-burkholderia cepacia complex, non-burkholderia plantari, non-burkholderia gladioli, burkholderia sp and non-pathogenic to vertebrates, such as birds, mammals and fish. this strain may be isolated from a soil sample using procedures known in the art and described by lorch et al., 1995. the burkholderia strain may be isolated from many different types of soil or growth medium. the sample is then plated on potato dextrose agar (pda). the bacteria are gram negative, and it forms round, opaque cream-colored colonies that change to pink and pinkish-brown in color and mucoid or slimy over time.[0124] colonies are isolated from the potato dextrose agar plates and screened for those that have biological, genetic, biochemical and/or enzymatic characteristics of the burkholderia strain of the present invention set forth in the examples below. in particular, the burkholderia strain has a 16s rrna gene comprising a forward sequence that is at least about 99.5 percent, more preferably about 99.9 percent and most preferably about 100 percent identical to the sequence set forth in seq id no: 8, 11 and 12 and a forward sequence that is at least about 99.5 percent, more preferably about 99.9 percent and most preferably about 100 percent identical to the sequence set forth in seq id no: 9, 10, 13, 14 and 15 as determined by clustal analysis. furthermore, as set forth below, this burkholderia strain may, as set forth below, have pesticidal activity, particularly, virucidal, herbicidal, germicidal, fungicidal, nematicidal, bactericidal and insecticidal and more particularly, herbicidal, algicidal, acaricidal, insecticidal, fungicidal and nematicidal activity. it is not pathogenic to vertebrate animals, such as mammals, birds, and fish.[0125] additionally, the burkholderia strain produces at least the pesticidal compounds set forth in the instant disclosure.[0126] the burkholderia strain is susceptible to kanamycin, chloramphenicol, ciprofloxacin, piperacillin, imipenem, and a combination of sulphamethoxazole and trimethoprim and contains the fatty acids 16:0, cyclo 17:0, 16:0 3-oh, 14:0, cyclo 19:0, 18:0.[0127] this burkholderia strain may be obtained by culturing a microorganism having the identifying characteristics of burkholderia a396 (nrrl accession no. b-50319) on potato dextrose agar (pda) or in a fermentation medium containing defined carbon sources such as glucose, maltose, fructose, galactose, and undefined nitrogen sources such as peptone, tryptone, soytone, and nz amine. algicidal and acaricidal compounds the algicidal and acaricidal compounds disclosed herein may have the following properties: (a) is obtainable from a novel burkholderia species, e.g., a396 (b) is, in particular, toxic to most common agricultural insect pests (c) has a molecular weight of about 525-555 and more particularly, 540 as determined by liquid chromatography/mass spectroscopy (lc/ms) (d) has 1h nmr values of 6.22, 5.81, 5.69, 5.66, 5.65, 4.64, 4.31, 3.93, 3.22, 3.21, 3.15, 3.10, 2.69, 2.62, 2.26, 2.23. 1.74, 1.15, 1.12, 1.05, 1.02 (d) has 13c nmr values of 172.99, 172.93, 169.57, 169.23, 167.59, 130.74, 130.12, 129.93, 128.32, 73.49, 62.95, 59.42, 57.73, 38.39, 38.00, 35.49, 30.90, 30.36, 29.26, 18.59, 18.38, 18.09, 17.93, 12.51 (e) has an high pressure liquid chromatography (hplc) retention time of about 10-15 minutes, more specifically about 12 minutes and even more specifically about 12.14 min on a reversed phase c-18 hplc (phenomenex, luna 5 micro c18 (2) 100 a, 100x4.60 mm) column using a water:acetonitrile (ch3cn) with a gradient solvent system (0-20 min 90-0 percent aqueous ch3cn, 20-24 min 100 percent ch3cn, 24-27 min, 0-90 percent aqueous ch3cn, 27-30 min 90 percent aqueous ch3cn) at 0.5 ml/min flow rate and uv detection of 210 nm (f) has a molecular formula, c24h36n4o6s2, which is determined by interpretation of 1h, 13c nmr and lc/ms data (g) a 13c nmr spectrum with signals for all 24 carbons, including 5 methyl, 4 methylene, 9 methine, and 6 quaternary carbons and (g) 1h nmr spectrum displaying characteristics of a typical depsipeptide, illustrating three-amino protons [4.63, 4.31, 3.93], and one ester carbinol proton [5.69]. in a particular embodiment, the compound has the structure ##str001##:[ftimg=60402154] or a pesticidally acceptable salt or stereoisomers thereof, wherein m is 1, 2, 3 or 4 n is 0, 1, 2, or 3 p and q are independently 1 or 2 x is o, nh or nr r1, r2 and r3 are the same or different and independently an amino acid side-chain moiety or an amino acid side-chain derivative and r is a lower chain alkyl, aryl or arylalkyl moiety.[0128] in an even more particular embodiment, the compound has the structure of fr901228:[ftimg=60402155][0129] provided herewith are compounds set forth in ##str002##:[ftimg=60402156] wherein: x, y and z are each independently-o, -nr1, or -s, wherein r1 is -h or c1-c10 alkyl r1, r2 and m are each independently-h, alkyl, substituted alkyl, alkenyl, substituted alkenyl, alkynyl, substituted alkynyl, aryl, substituted aryl, heteroaryl, substituted heteroaryl, heterocyclic, substituted heterocyclic, cycloalkyl, substituted cycloalkyl, alkoxy, substituted alkoxy, thioalkyl, substituted thioalkyl, hydroxy, halogen, amino, amido, carboxyl, -c(o)h, acyl, oxyacyl, carbamate, sulfonyl, sulfonamide, or sulfuryl.[0130] in an even another particular embodiment, family ##str002##compounds may be the compounds set forth in (vi)-(xix).[ftimg=60402157][ftimg=60402158][ftimg=60402159][0131] these are from either natural materials or compounds obtained from commercial sources or by chemical synthesis. natural sources of family ##str002##compounds include, but are not limited to, microorganisms, alga, and sponges. in a more particular embodiment, microorganisms which include the family ##str002##compounds include but are not limited to, or alternatively, family ##str002##compounds may be derived from species such as streptoverticillium waksmanii (compound vi) (umehara, et al., 1984), streptomyces pimprina (compound vii) (naik et al., 2001), streptoverticillium olivoreticuli (compounds viii, ix, x) (koyama y., et al., 1981), streptomyces sp (compounds xi, xii) (watabe et al., 1988), pseudomonas syringae (compounds xiii, xiv) (pettit et al., 2002). family ##str002## compounds may also be derived from algae including but not limited to red alga (compound xv) (n'diaye, et al., 1996), red alga martensia fragilis (compound xvi) (takahashi s. et al., 1998), diazona chinensis (compounds xvii and xviii) (lindquist n. et al., 1991), rhodophycota haraldiophyllum sp (compound xix) (guella et al., 1994).[0132] also provided is ##str003##:[ftimg=60402160] wherein: x and y are each independently -oh, -nr1, or -s, wherein r1 is -h or c1-c10 alkyl r1, r2 and m, a substituent on the oxazole ring, are each independently-h, alkyl, substituted alkyl, alkenyl, substituted alkenyl, alkynyl, substituted alkynyl, aryl, substituted aryl, heteroaryl, substituted heteroaryl, heterocyclic, substituted heterocyclic, cycloalkyl, substituted cycloalkyl, alkoxy, substituted alkoxy, thioalkyl, substituted thioalkyl, hydroxy, halogen, amino, amido, carboxyl, -c(o)h, acyl, oxyacyl, carbamate, sulfonyl, sulfonamide, or sulfuryl.[0133] further provided is ##str005##:[ftimg=60402161] wherein x and y are each independently -oh, -nri, or -s, wherein r1, r2 are each independently-h, alkyl (e.g., c1-c10 alkyl), substituted alkyl, alkenyl, substituted alkenyl, alkynyl, substituted alkynyl, aryl, substituted aryl, heteroaryl, substituted heteroaryl, heterocyclic, substituted heterocyclic, cycloalkyl, substituted cycloalkyl, alkoxy, substituted alkoxy, thioalkyl, substituted thioalkyl, hydroxy, halogen, amino, amido, carboxyl, -c(o)h, acyl, oxyacyl, carbamate, sulfonyl, sulfonamide, or sulfuryl.[0134] in a particular embodiment, family ##str005## compounds such as compounds from xx-xxiii set forth below may be derived from natural or commercial sources or by chemical synthesis.[ftimg=60402162][0135] natural sources of family ##str005##compounds include, but are not limited to plants, corals, microorganisms, and sponges. the microorganisms include, but are not limited to streptomyces griseus (compound xx) (hirota et al., 1978), streptomyces albus (compound xxi) (werner et al., 1980). family str004 compounds may also be derived from algae including but not limited to haraldiophyllum sp (compound xxii (guella et al., 2006), and red algae (compound xxiii) (n'diaye et al., 1994).[0136] in one embodiment, the compound may be derived from or is obtainable from a microorganism, and in particular from burkholderia species and characterized as having a structure comprising at least one ester, at least one amide, at least three methylene groups, at least one tetrahydropyranose moiety and at least three olefinic double bonds, at least six methyl groups, at least three hydroxyl groups, at least twenty five carbons and at least eight oxygen and one nitrogen. the compound further comprises at least one of the following characteristics:[0137] (a) pesticidal properties and in particular, nematicidal, fungicidal, insecticidal, acaricidal, algicidal and herbicidal properties[0138] (b) a molecular weight of about 530-580 and more particularly, 555 as determined by liquid chromatography/mass spectroscopy (lc/ms)[0139] (c) 1h nmr values of delta 6.40, 6.39, 6.00, 5.97, 5.67, 5.54, 4.33, 3.77, 3.73, 3.70, 3.59, 3.47, 3.41, 2.44, 2.35, 2.26, 1.97, 1.81, 1.76, 1.42, 1.37, 1.16, 1.12, 1.04[0140] (d) 13c nmr values of delta 173.92, 166.06, 145.06, 138.76, 135.71, 129.99, 126.20, 123.35, 99.75, 82.20, 78.22, 76.69, 71.23, 70.79, 70.48, 69.84, 60.98, 48.84, 36.89, 33.09, 30.63, 28.55, 25.88, 20.37, 18.11, 14.90, 12.81, 9.41[0141] (e) an high pressure liquid chromatography (hplc) retention time of about 7-12 minutes, more specifically about 10 minutes and even more specifically about 10.98 min on a reversed phase c-18 hplc (phenomenex, luna 5 micro c18(2) 100 a, 100x4.60 mm) column using a water:acetonitrile (ch3cn) with a gradient solvent system (0-20 min 90-0 percent aqueous ch3cn, 20-24 min 100 percent ch3cn, 24-27 min 0-90 percent aqueous ch3cn, 27-30 min 90 percent aqueous ch3cn) at 0.5 ml/min flow rate and uv detection of 210 nm[0142] (f) 13c nmr spectrum which exhibits 28 discrete carbon signals which may be attributed to six methyls, four methylene carbons, and thirteen methines including five sp2, four quaternary carbons[0143] (g) a molecular formula of c28h45no10 which was determined by interpretation of the esims and nmr data analysis[0144] (h) uv absorption bands between about 210-450 nm and most particularly at about 234 nm.[0145] also provided are compounds having the structure ##str004a##:[ftimg=60402163] wherein x, y and z are each independently -o, -nr, or -s, wherein r is h or c1-c10 alkyl r1, r2, r3, r4, r5, r6, r7, r8, r9, r10, r11, r12, and r13 are each independently h, alkyl, substituted alkyl, alkenyl, substituted alkenyl, alkynyl, substituted alkynyl, aryl, substituted aryl, heteroaryl, substituted heteroaryl, heterocyclic, substituted heterocyclic, cycloalkyl, substituted cycloalkyl, alkoxy, substituted alkoxy, thioalkyl, substituted thioalkyl, hydroxy, halogen, amino, amido, carboxyl, -c(o)h, acyl, oxyacyl, carbamate, sulfonyl, sulfonamide, or sulfuryl.[0146] in a particular embodiment, the compound has the structure set forth in ##str004b##:[ftimg=60402164] wherein r1, r2, r3, r4, r5, r6, r7, r8, r9, r10, r11, r12, and r13 are as previously defined for ##str004a##.[0147] in a more particular embodiment, the compound is templamide a with the following structure:[ftimg=60402165] in another embodiment, provided is a compound having formula ##str004c##:[ftimg=60402166] wherein r1, r2, r3, r4, r5, r6, r7, r8, and r11 are as previously defined for ##str004a##.[0148] in another embodiment, provided is a compound which may be derived from burkholderia species and characterized as having a structure comprising at least one ester, at least one amide, an epoxide methylene group, at least one tetrahydropyranose moiety and at least three olefinic double bonds, at least six methyl groups, at least three hydroxyl groups, at least 25 carbons and at least 8 oxygen and 1 nitrogen, and pesticide activity. the compound further comprises at least one of the following characteristics:[0149] (a) pesticidal properties and in particular, insecticidal, fungicidal, nematocidal, acaricidal, algicidal and herbicidal properties[0150] (b) a molecular weight of about 520-560 and particularly 537 as determined by liquid chromatography/mass spectroscopy (lc/ms)[0151] (c) 1h nmr delta values at about 6.41, 6.40, 6.01, 5.97, 5.67, 5.55, 4.33, 3.77, 3.75, 3.72, 3.64, 3.59, 3.54, 3.52, 2.44, 2.34, 2.25, 1.96, 1.81, 1.76, 1.42, 1.38, 1.17, 1.12, 1.04[0152] (d) 13c nmr values of delta 174.03, 166.12, 143.63, 137.50, 134.39, 128.70, 126.68, 124.41, 98.09, 80.75, 76.84, 75.23, 69.87, 69.08, 68.69, 68.60, 48.83, 41.07, 35.45, 31.67, 29.19, 27.12, 24.55, 19.20, 18.95, 13.48, 11.39, 8.04[0153] (e) high pressure liquid chromatography (hplc) retention time of about 6-15 minutes, more specifically about 8 minutes on a reversed phase c-18 hplc column using a water:acetonitrile (ch3cn) gradient, particularly, an high pressure liquid chromatography (hplc) retention time of about 8-15 minutes, more specifically about 11 minutes and even more specifically about 11.73 min on a reversed phase c-18 hplc (phenomenex, luna 5 micro c18(2) 100 a, 100x4.60 mm) column using a water:acetonitrile (ch3cn) with a gradient solvent system (0-20 min 90-0 percent aqueous ch3cn, 20-24 min 100 percent ch3cn, 24-27 min 0-90 percent aqueous ch3cn, 27-30 min 90 percent aqueous ch3cn) at 0.5 ml/min flow rate and uv detection of 210 nm[0154] (f) a molecular formula of c28h43no9 which was determined by interpretation of the esims and nmr data analysis[0155] (g) uv absorption bands at about 210-450 nm and most particularly at about 234 nm.[0156] in a particular embodiment, the compound has the structure ##str006a##:[ftimg=60402167] wherein x, y and z are each independently -o, -nr, or -s, wherein r is h or c1-c10 alkyl r1, r2, r3, r4, r5, r6, r7, r8, r11, r12, and r13 are each independently h, alkyl, substituted alkyl, alkenyl, substituted alkenyl, alkynyl, substituted alkynyl, aryl, substituted aryl, heteroaryl, substituted heteroaryl, heterocyclic, substituted heterocyclic, cycloalkyl, substituted cycloalkyl, alkoxy, substituted alkoxy, thioalkyl, substituted thioalkyl, hydroxy, halogen, amino, amido, carboxyl, -c(o)h, acyl, oxyacyl, carbamate, sulfonyl, sulfonamide, or sulfuryl.[0157] in a particular embodiment, the compound has the structure:[ftimg=60402168] in another embodiment, provided is a compound having formula ##str006b##:[ftimg=60402169] wherein r1, r2, r3, r4, r5, r6, r7, r8, and r11 are as previously defined for ##str006a##.[0158] in a more particular embodiment, the compound is templamide b with the following structure:[ftimg=60402170][0159] in yet another particular embodiment, the compound may be derived from burkholderia species and characterized as having a structure comprising at least one ester, at least one amide, an epoxide methylene group, at least one tetrahydropyranose moiety and at least three olefinic double bonds, at least six methyl groups, at least three hydroxyl groups, at least 25 carbons and at least 8 oxygen and at least 1 nitrogen. the compound further comprises at least one of the following characteristics:[0160] (a) pesticidal properties and in particular, insecticidal, fungicidal, acaricidal, nematicidal, algicidal and herbicidal properties[0161] (b) a molecular weight of about 510-550 and particularly about 523 as determined by liquid chromatography/mass spectroscopy (lc/ms)[0162] (c) 1h nmr delta values at about 6.41, 6.40, 6.01, 5.98, 5.68, 5.56, 4.33, 3.77, 3.75, 3.72, 3.65, 3.59, 3.55, 3.50, 2.44, 2.26, 2.04, 1.96, 1.81, 1.75, 1.37, 1.17, 1.04[0163] (d) 13c nmr values of delta 172.22, 167.55, 144.98, 138.94, 135.84, 130.14, 125.85, 123.37, 99.54, 82.19, 78.28, 76.69, 71.31, 70.13, 69.68, 48.83, 42.52, 36.89, 33.11, 30.63, 25.99, 21.20, 20.38, 18.14, 14.93, 12.84[0164] (e)

an high pressure liquid chromatography (hplc) retention time of about 6-15 minutes, more specifically about 8 minutes on a reversed phase c-18 hplc column using a water:acetonitrile (ch3cn) gradient, particularly, an high pressure liquid chromatography (hplc) retention time of about 8-15 minutes, more specifically about 10 minutes and even more specifically about 10.98 min on a reversed phase c-18 hplc (phenomenex, luna 5 micro c18(2) 100 a, 100x4.60 mm) column using a water:acetonitrile (ch3cn) with a gradient solvent system (0-20 min 90-0 percent aqueous ch3cn, 20-24 min 100 percent ch3cn, 24-27 min 0-90 percent aqueous ch3cn, 27-30 min 90 percent aqueous ch3cn) at 0.5 ml/min flow rate and uv detection of 210 nm[0165] (f) a molecular formula of c27h41no9 which was determined by interpretation of the esims and nmr data analysis[0166] (g) uv absorption bands at about 210-450 nm and most particularly at about 234 nm.[0167] in a more particular embodiment, the compound is a known compound fr901465 which was isolated earlier from culture broth of a bacterium of pseudomonas sp. no. 2663 (nakajima et al. 1996) and had been reported to have anticancer activity with the following structure:[ftimg=60402171]in an even another particular embodiment, family ##str006a##compounds may be the compounds set forth in xxiv to xxxix. these are from either natural materials or compounds obtained from commercial sources or by chemical synthesis. natural sources of family ##str006a##compounds include, but are not limited to, microorganisms, alga, and sponges. in a more particular embodiment, microorganisms which include the family ##str006a##compounds which may be derived from species such as pseudomonas sp. no. 2663 (compounds xxiv-xxvi) (nakajima et al., 1996), the synthetic analogues of the fr901464 (xxvii-xxxix) which have been synthesized and patented as anticancer compounds (see koide et al., us patent application no. 2008/0096879 a1).[0169] also provided are the pesticidal compounds produced by the formulation set forth above which comprises at least one of the following characteristics:[0170] (a) has pesticidal properties and in particular, herbicidal, insecticidal, nematicidal, and fungicidal properties[0171] (b) has a molecular weight of about 210-240 and more particularly, 222 as determined by liquid chromatography/mass spectroscopy (lc/ms)[0172] (e) has 1h nmr values of delta 7.90, 6.85, 4.28, 1.76, 1.46, 1.38, 1.37, 0.94[0173] (d) has 13c nmr values of delta 166.84, 162.12, 131.34 (2c), 121.04, 114.83 (2c), 64.32, 31.25, 28.43, 25.45, 22.18. 12.93[0174] (e) has an high pressure liquid chromatography (hplc) retention time of about 15-20 minutes, more specifically about 17 minutes and even more specifically about 17.45 min on a reversed phase c-18 hplc (phenomenex, luna 5p c18(2) 100 a, 100x4.60 mm) column using a water:acetonitrile (ch3cn) with a gradient solvent system (0-20 min 90-0 percent aqueous ch3cn, 20-24 min 100 percent ch3cn, 24-27 min 0-90 percent aqueous ch3cn, 27-30 min 90 percent aqueous ch3cn) at 0.5 ml/min flow rate and uv detection of 210 nm[0175] (f) the 13c nmr spectrum exhibited 13 discrete carbon signals which were attributed to one methyl, five methylene carbons, four methines, and three quaternary carbons[0176] (g) has a molecular formula of c13h18o3 which was determined by interpretation of the esims and nmr data analysis[0177] (h) has uv absorption bands between about 210-450 nm and most particularly at about 248 nm.[0178] also provided are compounds having the structure shown below[ftimg=60402172][0179] wherein x, is independently -o, -nr, or -s, wherein r is h or c1-c10 alkyl r1, r2, r3, r4, r5, and r6 are each independently h, alkyl, substituted alkyl, alkenyl, substituted alkenyl, alkynyl, substituted alkynyl, aryl, substituted aryl, heteroaryl, substituted heteroaryl, heterocyclic, substituted heterocyclic, cycloalkyl, substituted cycloalkyl, alkoxy, substituted alkoxy, thioalkyl, substituted thioalkyl, hydroxy, halogen, amino, amido, carboxyl, -c(o)h, acyl, oxyacyl, carbamate, sulfonyl, sulfonamide, or sulfuryl.[0180] in a more particular embodiment, the compound is butyl parben with the following structure:[ftimg=60402173][0181] in a more particular embodiment, the compound is hexyl parben with the following structure:[ftimg=60402174][0182] in a more particular embodiment, the compound is octyl parben with the following structure:[ftimg=60402175][0183] in yet another embodiment, the compound is f7h18, which has a molecular weight of about 1080. compositions [0184] a substantially pure culture, cell fraction or supernatant and compounds produced by the burkholderia strain disclosed herein, all of which are alternatively referred to as "active ingredient(s)", may be formulated into pesticidal compositions. in a particular embodiment, the supernatant may be a cell-free supernatant.[0185] the active ingredient(s) set forth above can be formulated in any manner. non-limiting formulation examples include but are not limited to emulsifiable concentrates (ec), wettable powders (wp), soluble liquids (sl), aerosols, ultra-low volume concentrate solutions (ulv), soluble powders (sp), microencapsulation, water dispersed granules, flowables (fl), microemulsions (me), nano-emulsions (ne), dusts, emulsions, liquids, flakes etc. in any formulation described herein, percent of the active ingredient is within a range of 0.01 percent to 99.99 percent.[0186] a solid composition can be prepared by suspending a solid carrier in a solution of pesticidal compounds and drying the suspension under mild conditions, such as evaporation at room temperature or vacuum evaporation at 65 degrees centigrade or lower. alternatively, a solid composition may be derived via spray-drying or freeze-drying.[0187] when referring to solid compositions, it should be understood by the artisan of ordinary skill that physical forms such as dusts, beads, powders, particulates, pellets, tablets, agglomerates, granules, floating solids and other known solid formulations are included. the artisan of ordinary skill will be able to readily optimize a particular solid formulation for a given application using methods well known to those of ordinary skill in the art.[0188] the composition may comprise gel-encapsulated compounds derived from the burkholderia strain set forth above. such gel-encapsulated materials can be prepared by mixing a gel-forming agent (e.g., gelatin, cellulose, or lignin) with a solution of algicidal compounds and inducing gel formation of the agent.[0189] the composition may additionally comprise a surfactant to be used for the purpose of emulsification, dispersion, wetting, spreading, integration, disintegration control, stabilization of active ingredients, and improvement of fluidity or rust inhibition. in a particular embodiment, the surfactant is a non-phytotoxic non-ionic surfactant which preferably belongs to epa list 4b. in another particular embodiment, the nonionic surfactant is polyoxyethylene (20) monolaurate. the concentration of surfactants may range between 0.1-35 percent of the total formulation, preferred range is 5-25 percent. the choice of dispersing and emulsifying agents, such as non-ionic, anionic, amphoteric and cationic dispersing and emulsifying agents, and the amount employed is determined by the nature of the composition and the ability of the agent to facilitate the dispersion of these compositions.[0190] in order to provide compositions containing the active ingredient(s) set forth above in the form of dusts, granules, water dispersible powders, aqueous dispersions, or emulsions and dispersions in organic liquids, the carrier or diluent agent in such compositions may be a finely divided solid, an organic liquid, water, a wetting agent, a dispersing agent, humidifying agent, or emulsifying agent, or any suitable combination of these. generally, when liquids and wettable powders are prepared, a conditioning agent comprising one or more surface-active agents or surfactants is present in amounts sufficient to render a given composition containing the active material, the microorganism, dispersible in water or oil.[0191] since these compositions can be applied as a spray utilizing a liquid carrier, it is contemplated that a wide variety of liquid carriers such as, for example, water, organic solvents, decane, dodecane, oils, vegetable oil, mineral oil, alcohol, glycol, polyethylene glycol, agents that result in a differential distribution of pathogenic bacterium in water being treated. combinations thereof and other known to artisan of ordinary skill can be used.[0192] the present compositions can also include other substances which are not detrimental to the active ingredient(s) such as adjuvants, surfactants, binders, stabilizers and the like, which are commonly used in algicides, either singly or in combination as needed.[0193] it will be understood by the artisan of ordinary skill that various additives or agents that predispose pests susceptible to the active ingredient set forth above are added to enhance its pesticidal action. by the phrase "additive that enhances the pesticidal action of the active ingredient" is meant any compound, solvent, reagent, substance, or agent that increases the effect of the active ingredient toward pests and more particularly, mites as compared to the pesticidal effect of the active ingredient in the absence of said additive. in some embodiments, these additives will increase the susceptibility of a particular pest to the active ingredient. additional additives include but are not limited to agents which weaken the biological defenses of susceptible pests. such agents can include salts, such as nacl and cacl2.[0194] the composition may further comprise another microorganism and/or pesticide (e.g, nematocide, fungicide, insecticide, herbicide, algicide, aracicide). the microorganism may include but is not limited to an agent derived from bacillus sp., pseudomonas sp., brevabacillus sp., lecanicillium sp., non-ampelomyces sp., pseudozyma sp., streptomyces sp, burkholderia sp, trichoderma sp, gliocladium sp. alternatively, the agent may be a natural oil or oil-product having fungicidal, herbicidal, aracidal, algicidal, nematocidal and/or insecticidal activity (e.g., paraffinic oil, tea tree oil, lemongrass oil, clove oil, cinnamon oil, citrus oil, rosemary oil).[0195] the composition, in particular, may further comprise an insecticide. the insecticide may include but is not limited to avermectin, bacillus thuringiensis, neem oil and azadiractin, spinosads, chromobacterium subtsugae, eucalyptus extract, entomopathogenic bacterium or fungi such a beauveria bassiana, and metarrhizium anisopliae and chemical insecticides including but not limited to organochlorine compounds, organophosphorous compounds, carbamates, pyrethroids, and neonicotinoids.[0196] the composition my further comprise a nematocide. the nematocide may include, but is not limited to chemical nematocides such as fenamiphos, aldicarb, oxamyl, carbofuran, natural product neamticide, avermectin, the fungi paecilomyces lilacinas and muscodor spp., the bacteria bacillus firmus and other bacillus spp. and pasteuria penetrans. [0197] the composition may further comprise a biofungicide such as extract of r. sachalinensis (regalia) or a fungicide. such fungicides include, but are not limited to, a single site anti-fungal agent which may include but is not limited to benzimidazole, a demethylation inhibitor (dmi) (e.g., imidazole, piperazine, pyrimidine, triazole), morpholine, hydroxypyrimidine, anilinopyrimidine, phosphorothiolate, quinone outside inhibitor, quinoline, dicarboximide, carboximide, phenylamide, anilinopyrimidine, phenylpyrrole, aromatic hydrocarbon, cinnamic acid, hydroxyanilide, antibiotic, polyamine, calamine, phthalimide, benzenoid (xylylalanine). in yet a further embodiment, the antifungal agent is a demethylation inhibitor selected from the group consisting of imidazole (e.g., triflumizole), piperazine, pyrimidine and triazole (e.g., bitertanol, myclobutanil, penconazole, propiconazole, triadimefon, bromuconazole, cyproconazole, diniconazole, fenbuconazole, hexaconazole, tebuconazole, tetraconazole, propiconazole).[0198] the antimicrobial agent may also be a multi-site non-inorganic, chemical fungicide selected from the group consisting of a nitrile (e.g., chloronitrile or fludioxonil), quinoxaline, sulphamide, phosphonate, phosphite, dithiocarbamate, chloralkylhios, phenylpyridin-amine, cyano-acetamide oxime.[0199] the compositions may be applied using methods known in the art. specifically, these compositions may be applied to plants or plant parts. plants are to be understood as meaning in the present context all plants and plant populations such as desired and undesired wild plants or crop plants (including naturally occurring crop plants). crop plants can be plants which can be obtained by conventional plant breeding and optimization methods or by biotechnological and genetic engineering methods or by combinations of these methods, including the transgenic plants and including the plant cultivars protectable or not protectable by plant breeders' rights. plant parts are to be understood as meaning all parts and organs of plants above and below the ground, such as shoot, leaf, flower and root, examples which may be mentioned being leaves, needles, stalks, stems, flowers, fruit bodies, fruits, seeds, roots, tubers and rhizomes. the plant parts also include harvested material, and vegetative and generative propagation material, for example cuttings, tubers, rhizomes, offshoots and seeds.[0200] treatment of the plants and plant parts with the compositions set forth above may be carried out directly or by allowing the compositions to act on their surroundings, habitat or storage space by, for example, immersion, spraying, evaporation, fogging, scattering, painting on, injecting. in the case that the composition is applied to a seed, the composition may be applied to the seed as one or more coats prior to planting the seed using one or more coats using methods known in the art.[0201] as noted above, the compositions may be herbicidal compositions. the composition may further comprise one or more herbicides. these may include, but are not limited to, a bioherbicide and/or a chemical herbicide. the bioherbicide may be selected from the group consisting of clove oil, cinnamon oil, lemongrass oil, citrus oil, orange peel oil, tentoxin, cornexistin, aal-toxin, manuka oil, leptospermone, thaxtomin, sarmentine, momilactone b, sorgoleone, ascaulatoxin and ascaulatoxin aglycone. the chemical herbicide may include, but is not limited to, diflufenzopyr and salts thereof, dicamba and salts thereof, topramezone, tembotrione, s-metolachlor, atrazine, mesotrione, primisulfuron-methyl, 2,4-dichlorophenoxyacetic acid, nicosulfuron, thifensulfuron-methyl, asulam, metribuzin, diclofop-methyl, fluazifop, fenoxaprop-p-ethyl, asulam, oxyfluorfen, rimsulfuron, mecoprop, and quinclorac, thiobencarb, clomazone, cyhalofop, propanil, bensulfuron-methyl, penoxsulam, triclopyr, imazethapyr, halosulfuron-methyl, pendimethalin, bispyribac-sodium, carfentrazone ethyl, sodium bentazon/sodium acifluorfen, glyphosate, glufosinate and orthosulfamuron.[0202] herbicidal compositions may be applied in liquid or solid form as pre-emergence or post-emergence formulations.[0203] for pre-emergence dry formulations, the granule size of the carrier is typically 1-2 mm (diameter) but the granules can be either smaller or larger depending on the required ground coverage. granules may comprise porous or non-porous particles.[0204] for post-emergence formulations, the formulation components used may contain smectite clays, attapulgite clays and similar swelling clays, thickeners such as xanthan gums, gum arabic and other polysaccharide thickeners as well as dispersion stabilizers such as nonionic surfactants (for example polyoxyethylene (20) monolaurate).[0205] in a particular embodiment, the composition may comprise in addition to the active ingredient another microorganism and/or algicide and/or acaricide. the microorganism may include but is not limited to an agent derived from bacillus sp., brevibacillus sp., and streptomyces sp.[0206] the compositions may also as set forth above, be algicidal compositions which can further comprise other algicides such as copper sulphate, diquat or thaxtomin a.[0207] the compositions may be acaricidal compositions which can further comprise other acaricides such as antibiotics, carbamates, formamidine acaricides, pyrethroids, mite growth regulators, organophosphate acaricides and diatomaceous earth. uses [0208] the compositions and pesticidal compounds derived from the burkholderia strain set forth herein may be used as pesticides, particularly as insecticides, nematocides, fungicides, algicides, acaricides and herbicides.[0209] specifically, nematodes that may be controlled using the method set forth above include but are not limited to parasitic nematodes such as root-knot, ring, sting, lance, cyst, and lesion nematodes, including but not limited to free living nematodes, meloidogyne, heterodera and globodera spp particularly meloidogyne incognita (root knot nematodes), as well as globodera rostochiensis and globodera pailida (potato cyst nematodes) heterodera glycines (soybean cyst nematode) heterodera schachtii (beet cyst nematode) oligonychus pratensis (banks grass mite) eriophyes cynodoniensis (bermuda grass mite) bryobia praetiosa (clover mite)-and heterodera avenae (cereal cyst nematode).[0210] phytopathogenic insects controlled by the method of the present invention include, but are not limited to, insects from the order[0211] (a) lepidoptera, for example, acleris spp., adoxophyes spp., aegeria spp., agrotis spp., alabama argillaceae, amylois spp., anticarsia gemmatalis, archips spp., argyrotaenia spp., autographa spp., busseola fusca, cadra cautella, carposina nipponensis, chilo spp., choristoneura spp., clysia ambiguella, cnaphalocrocis spp., cnephasia spp., cochylis spp., coleophora spp., crocidolomia binotalis, cryptophlebia leucotreta, cydia spp., diatraea spp., diparopsis castanea, earias spp., ephestia spp., eucosma spp., eupoecilia ambiguella, euproctis spp., euxoa spp., grapholita spp., hedya nubiferana, heliothis spp., hellula undalis, hyphantria cunea, keiferia lycopersicella, leucoptera scitella, lithocollethis spp., lobesia botrana, lymantria spp., lyonetia spp., malacosoma spp., mamestra brassicae, manduca sexta, operophtera spp., ostrinia nubilalis, pammene spp., pandemis spp., panolis flammea, pectinophora gossypiella, phthorimaea operculella, pieris rapae, pieris spp., plutella xylostella, prays spp., scirpophaga spp., sesamia spp., sparganothis spp., spodoptera spp., synanthedon spp., thaumetopoea spp., tortrix spp., trichoplusia ni and yponomeuta spp.[0212] (b) coleoptera, for example, agriotes spp., anthonomus spp., atomaria linearis, chaetocnema tibialis, cosmopolites spp., curculio spp., dermestes spp., diabrotica spp., epilachna spp., eremnus spp., leptinotarsa

decemlineata, lissorhoptrus spp., melolontha spp., orycaephilus spp., otiorhynchus spp., phlyctinus spp., popillia spp., psylliodes spp., rhizopertha spp., scarabeidae, sitophilus spp., sitotroga spp., tenebrio spp., tribolium spp. and trogoderma spp. (c) orthoptera, for example, blatta spp., blattella spp., gryllotalpa spp., leucophaea maderae, locusta spp., periplaneta spp. and schistocerca spp. (d) isoptera, for example, reticulitermes spp. (e) psocoptera, for example, liposcelis spp. (f) anoplura, for example, haematopinus spp., linognathus spp., pediculus spp., pemphigus spp. and phylloxera spp. (g) mallophaga, for example, damalinea spp. and trichodectes spp. (h) thysanoptera, for example, frankliniella spp., hercinotnrips spp., taeniothrips spp., thrips palmi, thrips tabaci and scirtothrips aurantii (i) heteroptera, for example, cimex spp., distantiella theobroma, dysdercus spp., euchistus spp., eurygaster spp., leptocorisa spp., nezara spp., piesma spp., rhodnius spp., sahlbergella singularis, scotinophara spp., oncopeltus spp. lygys spp. and tniatoma spp. (j) homoptera, for example, aleurothrixus floccosus, aleyrodes brassicae, aonidiella spp., aphididae, aphis spp., aspidiotus spp., bemisia tabaci, ceroplaster spp., chrysomphalus conidium, chrysomphalus dictyospermi, coccus hesperidum, empoasca spp., eriosoma larigerum, erythroneura spp., gascardia spp., laodelphax spp., lecanium corni, lepidosaphes spp., macrosiphus spp., myzus spp., nephotettix spp., nilaparvata spp., paratoria spp., pemphigus spp., planococcus spp., pseudaulacaspis spp., pseudococcus spp., psylla spp., pulvinaria aethiopica, quadraspidiotus spp., rhopalosiphum spp., saissetia spp., scaphoideus spp., schizaphis spp., sitobion spp., trialeurodes vaporariorum, trioza erytreae and unaspis citri (k) hymenoptera, for example, acromyrmex, atta spp., cephus spp., diprion spp., diprionidae, gilpinia polytoma, hoplocampa spp., lasius spp., monomorium pharaonis, neodiprion spp., solenopsis spp. and vespa spp. (1) diptera, for example, aedes spp., antherigona soccata, bibio hortulanus, calliphora erythrocephala, ceratitis spp., chrysomyia spp., culex spp., cuterebra spp., dacus spp., drosophila melanogaster, fannia spp., gastrophilus spp., glossina spp., hypoderma spp., hyppobosca spp., liriomyza spp., lucilia spp., melanagromyza spp., musca spp., oestrus spp., orseolia spp., oscinella frit, pegomyia hyoscyami, phorbia spp., rhagoletis pomonella, sciara spp., stomoxys spp., tabanus spp., tannia spp. and tipula spp. (m) siphonaptera, for example, ceratophyllus spp. and xenopsylla cheopis and (n) from the order thysanura, for example, lepisma saccharina. the active ingredients according to the invention may further be used for controlling crucifer flea beetles (phyllotreta spp.), root maggots (delia spp.), cabbage seedpod weevil (ceutorhynchus spp.) and aphids in oil seed crops such as canola (rape), mustard seed, and hybrids thereof, and also rice and maize. in a particular embodiment, the insect may be a member of the spodoptera, more particularly, spodoptera exigua, myzus persicae, plutella xylostella or euschistus sp.[0213] the substances and compositions may also be used to modulate emergence in either a pre-emergent or post-emergent formulation of monocotyledonous. including sedges and grasses, or dicotyledonous weeds. in a particular embodiment, the weeds may include, but not be limited to, chenopodium sp. (e.g. c. album), abutilon sp. (e.g. a. theophrasti), helianthus sp. (e.g. h. annuus), ludwigia sp. (e.g. l. hexapetala), ambrosia sp. (e.g. a. artemesifolia), amaranthus sp, (e.g., a. retroflexus, a. palmeri), convolvulus sp. (e.g. c. arvensis), ipomoeae sp., brassica sp. (e.g. b. kaber), raphanus sp., taraxacum sp. (e.g. t. officinale), centaurea sp. (e.g. c. solstitalis), conyza sp. (e.g. c. bonariensis), cirsium sp. (e.g. c. arvense), lepidium sp., gallium sp., solanum sp. (e.g. s. nigrum), malva (e.g. m. neglecta), cyperus sp. (e.g. c. rotundus), euphorbia sp., trifolium sp. medicago sp., hydrilla sp., azolla sp., digitaria sp. (e.g. d. sanguinalis), setaria sp. (e.g. s. lutescens), cynodon dactylon, bromus sp. (e.g., b. teclorum), poa sp. (e.g. p. annia, p. pratensis), lollium sp. (e.g. l. perenne), sorghum sp. (e.g. s. halepense), arundo donax, festuca sp, (e.g. f. arundinaceae), echinochloa sp. (e.g., e. crus-galli, e. phyllopogon).[0214] the burkholderia strain, compounds and compositions set forth above may also be used as a fungicide. the targeted fungus may be a fusarium sp., botrytis sp., monilinia sp., colletotrichum sp, verticillium sp. microphomina sp., phytophtora sp, mucor sp., podosphaera sp., rhizoctonia sp., peronospora sp., geotrichum sp., phoma, and penicillium. in another most particular embodiment, the bacteria are xanthomonas. [0215] the substance or compositions can be used to control, reduce and or eliminate the growth and proliferation of marine and non-marine micro and macro algae including but not limited to unicellular, multicellular and diatom, red-, green- and bluegreen-algae such as pseudokirchneriella subcapitata, rhizoclonium sp., cladophoera sp., anabaena sp., nostoc sp., hydrodictyon sp., chara sp, microcystis and didymo sp., chlamydomonas sp., scenedesmus sp., oscillatoria sp., volvox sp., navicula sp, oedogonium sp., spirogyra sp., batrichospermum sp., rhodymenia sp., callithamnion sp.,undaria sp., through algaecide and algaestatic activity.[0216] the active ingredient(s) and compositions set forth above may be applied to locations containing algae. these include but are not limited to a body of water such as a pond, lake, stream, river, aquarium, water treatment facility, power plant or a solid surface, such as plastic, concrete, wood, fiberglass, pipes made of iron and polyvinyl chloride, surfaces covered wih coating materials and/or paints. [0217] as noted above, the active ingredient(s) and compositions set forth above may be applied to locations containing arachnids, such as mites, including but not limited to, panonychus sp. such as panonychus citri (citrus red mite), and panonychus ulmi (red spider mite), tetranychus sp. such as tetranychus kanzawi (kanzawa spider mite), tetranychus urticae (2 spotted spider mite), tetranychus pacificus (pacific spider mite), tetranychus turkestanii (strawberry mite) and tetranychus cinnabarinus (carmine spider mite), oligonychus sp. such as oligonychus panicae (avacado brown mite), oligonychus perseae (persea mite), oligonychus pratensis (banks grass mite) and oligonychus coffeae, aculus sp. such as aculus cornatus (peach silver mite), aculus fockeni (plum rust mite) and aculus lycopersici (tomato russet mite), eotetranychus sp. such as eotetranychus wilametti, eotetranychus yumensis (yuma spider mite) and eotetranychus sexmaculatis (6-spotted mite), bryobia rubrioculus (brown mite), epitrimerus pyri (pear rust mite), phytoptus pyri (pear leaf blister mite), acalitis essigi (red berry mite), polyphagotarsonemus latus (broad mite), eriophyes sheldoni (citrus bud mite), brevipalpus lewisi (citrus flat mite), phylocoptruta oleivora (citrus rust mite), petrobia lateens (brown wheat mite), oxyenus maxwelli (olive mite), rhizoglyphus spp., tyrophagus spp., diptacus gigantorhyncus (bigheaded plum mite) and penthaleaa major (winter grain mite), avocado red mite, flat mite, black and red mango spider mite, papaya leaf edgeroller mite, texas citrus mite, european red mite, grape erineum mite (blister mite), pacific spider mite, willamette spider mitepink citrus rust mite.[0218] such locations may include but are not limited to crops that are infested with such mites or other arachnids (e.g., aphenids).[0219] the invention will now be described in greater detail by reference to the following non-limiting examples.examples [0220] the compositions and methods set forth above will be further illustrated in the following, non-limiting examples. the examples are illustrative of various embodiments only and do not limit the claimed invention regarding the materials, conditions, weight ratios, process parameters and the like recited herein. 1. example 1 isolation and identification of the microbe [0221] 1.1 isolation of the microorganism[0222] the microbe is isolated using established techniques know to the art from a soil sample collected under an evergreen tree at the rinnoji temple, nikko, japan. the isolation is done using potato dextrose agar (pda) using a procedure described in detail by lorch et al., 1995. in this procedure, the soil sample is first diluted in sterile water, after which it is plated in a solid agar medium such as potato dextrose agar (pda). the plates are grown at 25 degrees centigrade for five days, after which individual microbial colonies are isolated into separate pda plates. the isolated bacterium is gram negative, and it forms round, opaque cream-colored colonies that change to pink and pinkish-brown in color and mucoid or slimy over time.[0223] 1.2. identification on the microorganism[0224] the microbe is identified based on gene sequencing using universal bacterial primers to amplify the 16s rrna region. the following protocol is used: burkholderia sp. a396 is cultured on potato-dextrose agar plates. growth from a 24 hour-old plate is scraped with a sterile loop and re-suspended in dna extraction buffer. dna is extracted using the mobio ultra clean microbial dna extraction kit. dna extract is checked for quality/quantity by running 5 micro l on a 1 percent agarose gel. pcr reactions are set up as follows: 2 micro l dna extract, 5 micro l pcr buffer, 1 micro l dntps (10 mm each), 1.25 micro l forward primer (27f (seq id no:1), 1.25 micro l reverse primer (907r (seq id no:2)) and 0.25 micro l taq enzyme. the reaction volume is made up to 50 micro l using sterile nuclease-free water. the pcr reaction includes an initial denaturation step at 95 degrees centigrade for 10 minutes, followed by 30 cycles of 94 degrees centigrade /30 sec, 57 degrees centigrade /20 sec, 72 degrees centigrade /30 sec, and a final extension step at 72 degrees centigrade for 10 minutes.[0225] the product's approximate concentration and size is calculated by running a 5 micro l volume on a 1 percent agarose gel and comparing the product band to a mass ladder.[0226] excess primers, dntps and enzyme are removed from the pcr product with the mobio pcr clean up kit. the cleaned pcr product as directly sequenced using primers 27f (same as above), 530f (seq id no:3)), 1114f (seq id no:4)) and 1525r (seq id no:5)), 1100r (seq id no:6)), 519r (seq id no:7).[0227] the 16s rrna gene sequence of strain a396 is compared with the available 16s rrna gene sequences of representatives of the beta -proteobacteria using blast. strain a395 a396 is closely related to members of the burkholderia cepacia complex, with 99 percent or higher similarity to several isolates of burkholderia multivorans, burkholderia vietnamensis, and burkholderia cepacia. a blast search excluding the b. cepacia complex, showed 98 percent similarity to b. plantarii, b. gladioli and burkholderia sp. isolates.[0228] a distance tree of results using the neighbor joining method, showed that a396 is related to burkholderia multivorans and other burkholderia cepacia complex isolates. burkholderia plantarii and burkholderia glumae grouped in a separate branch of the tree.[0229] the isolated burkholderia strain was found to contain the following sequences: forward sequence, dna sequence with 27f primer, 815 nucleotides (seq id no:8) reverse sequence, 1453 bp, using primers 1525r, 1100r, 519r (seq id no:9) reverse sequence 824 by using primer 907r (seq id no: 10) forward sequence 1152 by using primer 530f (seq id no:11) forward sequence 1067 by using 1114f primer (seq id no:12) reverse sequence 1223 by using 1525r primer (seq no:13) reverse sequence 1216 by using 1100r primer (seq id no:14) reverse sequence 1194 by using 519r primer (seq id no:15)[0230] 1.3. proof that burkholderia a396 does not belong to burkholderia cepacia complex[0231] 1.3.1 molecular biology work using specific pcr primers[0232] in order to confirm the identification of burkholderia a396 as burkholderia multivorans, additional sequencing of housekeeping genes is performed. burkholderia multivorans is a known member of the burkholderia cepacia complex. efforts are focused on pcr of reca genes, as described by mahenthiralingam et al., 2000. the following primers are used: (a) bcr1 and bcr2 set forth in mahenthiralingam et al., 2000 to confirm b. cepacia complex match and (b) bcrbm1 and bcrbm2 set forth mahenthiralingam et al, 2000 to confirm b. multivorans match. a product-yielding pcr reaction for the first primer set would confirm that the microbe belongs to the b. cepacia complex. a product-yielding pcr reaction for the second primer set would confirm that the microbe is indeed b. multivorans. [0233] no pcr product is obtained for either pair of primers. the performance of the pcr reaction and primers is tested using burkholderia multivorans atcc 17616 (positive control) and pseudomonas fluorescens (negative control). strong bands are observed both for b. multivorans using both sets of primers. no bands are observed for pseudomonas fluorescens. the results indicate that a396 is a burkholderia, but not a member of the b. cepacia complex, and not burkholderia multivorans. this is also demonstrated in a comparative culture experiment in which both a396 and a type culture of b. multivorans are grown side-by-side in a shake culture, and the growth is monitored daily using optical density measurements at 600 nm. under the set conditions, species a396 grew much faster than the b. multivorans type strain (fig. 1).[0234] 1.3.2 dna-dna hybridization[0235] in order to confirm that isolate a396 is a new species of burkholderia, a dna-dna hybridization experiment with burkholderia multivorans (the closest 16srrna sequence match) is conducted. biomass for both a396 and b. multivorans is produced in isp2 broth, grown over 48 hours at 200 rpm/25 degrees centigrade in fernbach flasks. the biomass is aseptically harvested by centrifugation. the broth is decanted and the cell pellet is resuspended in a 1:1 solution of water: isopropanol. dna-dna hybridization experiments are performed by the dsmz, the german collection of microorganisms and cell cultures in germany. dna is isolated using a french pressure cell (thermo spectronic) and is purified by chromatography on hydroxyapatite as described by cashion et al., 1977. dna-dna hybridization is carried out as described by de ley et al., 1970 under consideration of the modifications described by huss et al., 1983 using a model cary 100 bio uv/vis-spectrophotometer equipped with a peltier thermostatted 6x6 multicell changer and a temperature controller with in-situ temperature probe (varian).[0236] dsmz reported percent dna-dna similarly between a396 and burkholderia multivorans of 37.4 percent. the results indicate that burkholderia sp strain a396 does not belong to the species burkholderia multivorans when the recommendations of a threshold value of 70 percent dna-dna similarity for the definition of bacterial species by the ad hoc committee (wayne et al., 1987) are considered.[0237] 1.4. biochemical profile using biolog gn2 plates[0238] for the carbon source utilization profile, a396 is grown overnight on potato dextrose agar (pda). the culture is transferred to bug agar to produce an adequate culture for biolog experiments as recommended by the manufacturer (biolog, hayward, calif.). [0239] the biochemical profile of the microorganism is determined by inoculating onto a biolog gn2 plate and reading the plate after a 24-hour incubation using the microlog 4-automated microstation system. identification of the unknown bacteria is attempted by comparing its carbon utilization pattern with the microlog 4 gram negative database.[0240] no clear definitive matches are found to the biolog profile. the closest matches all had less than 35 percent similarity with a396: pseudomonas spinosa (burkholderia), burkholderia cepacia, and burkholderia pseudomallei. the results are shown in table 1.table 1biochemical profile of a396substrateresultsubstrateresultcyclodextrin-l-arabinose-dextrin-d-arabitol-glycogen-d-cellobiose-tween 40+erythritol-tween 80+d-fructose-n-acetyl-d-galactoseamine-l-fucose-n-acetyl-d-glucosamine-d-galactose+/-adonitol-gentibiose-succinic acid mon-methyl-d-glucose+esteracetic acid-m-inositol-cis-aconitic acid-d-lactose-citric acid-lactulose-formic acid+maltose-d-galactonic acid lactone-d-mannitol-d-galacturonic acid-d-mannose-d-gluconic acid-d-melibiose-d-glucosaminic acid- beta -methyl-d-glucoside-d-glucuronic acid-d-psicose-a-hydroxyburytic acid-d-raffinose- beta -hydroxybutyric acid+l-rhamonose-gamma-hydroxybutyric acid-d-sorbitol-p-hydroxyphenylacetic acid-sucrose-itaconic acid-d-trehalose+a-keto butyric acid-turanose-a-keto glutaric acid-xylitol-a-ket valeric acid-pyruvic acid methyl-estherd,l-lactic acid-uridine-malonic acid-thymidine-propionic acid+phenyethyl-amine-quinic acid-putrescine-d-saccharic acid-2-aminoethanol-sebacic acid-2,3-butanediol-succinic acid+glycerol+/-bromosuccinic acid-d,l-a-glycerol phosphate+/-succinamic acid-a-d-glucose-1--phosphateglucuronamide-d-glucose-6-phosphate+l-alaninamide+gamma-amino butyric acid+d-alanine-urocanic acid-l-alanine+inosine-l-alanyl-glycine-l-phenylalanine+l-asparagine+l-proline-l-aspartic acid+/-l-pyroglutamic acid-l-glutamic acid+d-serine-glycyl-l-aspartic acid-l-serine-glycyl-l-glutamic acid-l-threonine-l-histidine-d,l-carnitine-hydroxy-l-proline+l-ornithine-l-leucine-[0241] 1.5. fatty acid composition[0242] after incubation for 24 hours at 28 degrees centigrade, a loopful of well-grown cells are harvested and fatty acid methyl esters are prepared, separated and identified using the sherlock microbial identification system (midi) as described (see vandamme et al., 1992). the predominant fatty acids present in the burkholderia a396 are as follows: 16:0 (24.4 percent), cyclo 17:0 (7.1 percent), 16:0 3-oh (4.4 percent), 14:0 (3.6 percent), 19:0 ?8c (2.6 percent) cyclo, 18:0 (1.0 percent). summed feature 8 (comprising 18:1 ?7c) and summed feature 3 (comprising of 16:1 ?7c and 16:1 ?6c) corresponded to 26.2 percent and 20.2 percent of the total peak area, respectively. summed feature 2 comprising 12:0 alde, 16:1 iso i, and 14:0 3-oh) corresponded to 5.8 percent of the total peak area while summed feature 5 comprising 18:0 ante and 18:2 ?6,9c corresponded to 0.4 percent. other fatty acids detected in a396 in minor quantities included: 13:1 at 12-13 (0.2 percent), 14:1 ?5c (0.2 percent), 15:0 3-oh (0.13 percent), 17:1 ?7c (0.14 percent), 17:0 (0.15 percent), 16:0 iso 3-oh (0.2 percent), 16:0 2-oh (0.8 percent), 18:1 ?7c 11-methyl (0.15 percent), and 18:1 2-oh (0.4 percent).[0243] a comparison of the fatty acid composition of a396 with those of known microbial strains in the midi database suggested that the fatty acids in the novel strain a396 were most similar with those of burkholderia cenocepacia. [0244] 1.6 resistance to antibiotics[0245] antibiotic susceptibility of burkholderia

a396 is tested using antibiotic disks on muller-hinton medium as described in pml microbiological's technical data sheet #535. results obtained after 72-hour incubation at 25 degrees centigrade are presented in table 2 below.table 2susceptibility of mbi-206 to various antibiotics. +++ verysusceptible, ++ susceptible, -resistantconcentration (micro g)susceptibletetracycline30-kanamycin30+++erythromycin15-streptomycin10-penicillin10-ampicillin10-oxytetracycline30-chloramphenicol30++ciprofloxacin5++gentamicin10-piperacillin100+++cefuroxime30-imipenem10+++sulphamethoxazole-23.75/25++trimethoprim[0246] the results indicate that the antibiotic susceptibility spectrum of burkholderia a396 is quite different from pathogenic b. cepacia complex strains. burkholderia a396 is susceptible to kanamycin, chloramphenicol, ciprofloxacin, piperacillin, imipenem, and a combination of sulphamethoxazole and trimethoprim. as a comparison, zhou et al., 2007 tested the susceptibility of 2,621 different strains in b. cepacia complex isolated from cystic fibrosis patients, and found that only 7 percent and 5 percent of all strains were susceptible to imipenem or ciprofloxacin, respectively. they also found 85 percent of all strains to be resistant to chloramphenicol (15 percent susceptible), and 95 percent to be resistant (5 percent susceptible) to the combination of sulphamethoxazole and trimethoprim. results of zhou et al., 2007 are similar to those of pitt et al., 1996 who determined antibiotic resistance among 366 b. cepacia isolates and reported that most of them are resistant to ciprofloxacin, cefuroxime, imipenem, chloramphenicol, tetracycline, and sulphametoxacole. 2. example 2 burkholderia formulation and isolation of fractions from formulated product [0247] the following procedure is used for the purification of compounds extracted from a formulated product of mbi-206 containing a whole cell broth of a culture of burkholderia sp.:[0248] the culture broth derived from the 10-l fermentation burkholderia (a396) in hy soy growth medium and formulated using methyl 0.1 percent and propyl paraben, 0.1 percent hexanol 0.67 percent and glycosperse 0-20, 0.67 percent is extracted with amberlite xad-7 resin (asolkar et al., "weakly cytotoxic polyketides from a marine-derived actinomycete of the genus streptomyces strain cnq-085." j. nat. prod. 69:1756-1759. 2006) by shaking the cell suspension with resin at 225 rpm for two hours at room temperature. the resin and cell mass are collected by filtration through cheesecloth and washed with di water to remove salts. the resin, cell mass, and cheesecloth are then soaked for 2 h in acetone after which the acetone is filtered and dried under vacuum using rotary evaporator to give the crude extract (mbi-206-fp-ce). the crude extract is then fractionated by using reversed-phase c18 vacuum liquid chromatography (h2o/ch3oh gradient 80:20 to 0:100 percent) to give 10 fractions (see fig. 1 for schematic). these fractions are then concentrated to dryness using rotary evaporator and the resulting dry residues are screened for biological activity using a whole plant herbicidal assay. the active fractions, fractions 3, 4, 5 and 6 and indicated as mbi-206-fp-3, mbi-206-fp-4, mbi-206-fp-5, and mbi-206-fp-6 respectively are then subjected to repeatedly to reversed phase hplc separation (spectra system p4000 (thermo scientific) to give pure compounds, which are then screened in above-mentioned bioassays to locate/identify the active compounds (see fig. 2).[0249] 2.1 analysis of formulation fractions[0250] these fractions are analyzed on a thermo high performance liquid chromatography (hplc) instrument equipped with finnigan surveyor pda plus detector, autosampler plus, ms pump and a 4.6 mmx100 mm luna c18 5 um column (phenomenex). the solvent system consisted of water (solvent a) and acetonitrile (solvent b). the mobile phase begins at 10 percent solvent b and is linearly increased to 100 percent solvent b over 20 min and then kept for 4 min, and finally returned to 10 percent solvent b over 3 min and kept for 3 min. the flow rate is 0.5 ml/min. the injection volume is 10 micro l and the samples are kept at room temperature in an auto sampler.[0251] to discover the identity of the compound, additional spectroscopic data such as lc/ms and uv are recorded. compound corresponding to fraction 5, with a retention time of 17.45 minutes is not found in any of the starting materials, which indicates that the compound is a product of a chemical reaction between natural products in the microbial fermentation broth and one or more of the compounds found in the formulation agents. specifically, this fraction was analyzed using esi-lcms on a thermo finnigan lcq deca xp plus electrospray (esi) instrument using both positive and negative ionization modes in a full scan mode (m/z 100-1500 da) on a lcq deca xpplus mass spectrometer (thermo electron corp., san jose, calif.). mass spectroscopy analysis is performed under the following conditions: the flow rate of the nitrogen gas was fixed at 30 and 15 arb for the sheath and aux/sweep gas flow rate, respectively. electrospray ionization was performed with a spray voltage set at 5000 v and a capillary voltage at 35.0 v. the capillary temperature was set at 400 degrees centigrade the data was analyzed on xcalibur software. the additional new compounds found in fraction 5 were found to have a molecular weight (mw) of 194 (rt=14.74 min) and 222 (rt=17.43 min)[0252] 2.2 bioassay[0253] healthy radish plants with two to three true leaves were selected for testing. the radish plants are 13 days old at treatment. the plants are sorted so that all treatments are equivalent in foliage surface area and plant height. the pots are labeled with treatment number and repetition number. three repetitions per treatment are tested.[0254] ten fractions of mbi-206 formulated product are tested. the fractions are at a concentration of 10 mg/ml. the crude extracts of the formulated product and broth are also tested. an untreated control (treated with deionized water) and a positive control (roundup super concentrate at a rate of 2.5 fluid ounces per gallon) are included in the test.[0255] the following treatments were tested as shown in table 3:table 3test descriptiontreatmentsample iddescription1mbi-206-fp-f14 percent ethanol/water (0.2 percent glycosperse)2mbi-206-fp-f24 percent ethanol/water (0.2 percent glycosperse)3mbi-206-fp-f34 percent ethanol/water (0.2 percent glycosperse)4mbi-206-fp-f44 percent ethanol/water (0.2 percent glycosperse)5mbi-206-fp-f54 percent ethanol/water (0.2 percent glycosperse)6mbi-206-fp-f64 percent ethanol/water (0.2 percent glycosperse)7mbi-206-fp-f74 percent ethanol/water (0.2 percent glycosperse)8mbi-206-fp-f84 percent ethanol/water (0.2 percent glycosperse)9mbi-206-fp-f94 percent ethanol/water (0.2 percent glycosperse)10mbi-206-fp-f104 percent ethanol/water (0.2 percent glycosperse)11mbi-206-fp-ce4 percent ethanol/water (0.2 percent glycosperse)12mbi-206-ce (broth)4 percent ethanol/water (0.2 percent glycosperse)13utcutc (di water)14positive controlpos. control (roundup @ 2.5 fl oz/gal(ai: glyphosate @ 50.2 percent))[0256] all products and treatments are well shaken prior to application. treatments are applied using a nozzle from a 2-ounce spray bottle. separate spray nozzles were used for each treatment. the plant foliage is sprayed evenly and with a moderate volume (i.e. neither a light misting nor a heavy application that resulted in runoff). two milliliters of each treatment are sprayed simultaneously over the three repetitions of each treatment so that each plant is treated with approximately 0.67 milliliters of treatment solution.[0257] the plants are allowed to air dry and are then randomized in holding trays. each tray is labeled with the experiment name and treatment date and placed on the laboratory greenhouse shelves. the laboratory greenhouse maintains a temperature of 70-80 degrees fahrenheit and a relative humidity of 30-40 percent. throughout the bioassay, plants are watered from below by filling the holding trays with an appropriate amount of water so that plant foliage remained dry.[0258] results are taken at 3, 8, and 14 days after treatment. symptoms included foliage burning and plant stunting. the following rating scale, shown in table 4 is used to quantify efficacy. ratings are determined by observing the following factors relative to the plants of the untreated control: overall plant health, average plant height, and foliage health. symptoms of affected plants may include discolored/spotted/burnt/bleached foliage, warped/twisted/curled leaves, side branching (due to damaged apical meristem), plant dieback, or death.table 4rating scale0 0 percent control symptoms0.5 ?5 percent control symptoms1 10 percent control symptoms2 25 percent control symptoms3 50 percent control symptoms4 75 percent control symptoms5100 percent control symptoms[0259] the mean of three readings is shown in fig. 2. in a whole plant herbicide test, fractions 4 and 5 show good herbicidal activity (see fig. 2).[0260] 2.3 isolation of pesticidal compounds from formulation[0261] this fraction was further purified using a hplc c-18 column (phenomenex, luna 10u c18(2) 100 a, 250x30), water:acetonitrile gradient solvent system (0-10 min 80 percent aqueous ch3cn, 10-25 min 80-65 percent aqueous ch3cn, 25-50 min 65-50 percent aqueous ch3cn, 50-60 min 50-70 percent aqueous ch3cn, 60-80 min 70-0 percent aqueous ch3cn, 80-85 min 0-20 percent aqueous ch3cn) at 8 ml/min flow rate and uv detection of 210 nm, to give butyl paraben, retention time 59.15 min (mbi206-fp-f5h32) and hexyl paraben, retention time 74.59 min (mbi206-fp-f5h40) respectively.[0262] 2.3.1 nmr spectroscopy analysis of compounds[0263] nmr spectra were measured on a bruker 600 mhz gradient field spectrometer. the reference is set on the internal standard tetramethylsilane (tms, 0.00 ppm).[0264] 2.3.1.1 structure elucidation of hexyl paraben (mbi206-fp-f5h40)[0265] the active compound was isolated as a colorless solid, with uv absorption at 248 nm. the (-) esims showed molecular ion at 221 (m-h) corresponding to the molecular weight of 222. the compound exhibited 1h nmr delta signals at 7.90, 6.85, 4.28, 1.76, 1.46, 1.38, 1.37, 0.94 and has 13c nmr values of 166.84, 162.12, 131.34 (2c), 121.04, 114.83 (2c), 64.32, 31.25, 28.43, 25.45, 22.18. 12.93. the molecular formula of c13h18o3 (5 degrees of unsaturation), was assigned by combination of nmr and esi mass spectrometry data. the 1h nmr spectrum exhibited signals for an a2b2-type aromatic signals at delta 7.90, 2h d, j=8.5 hz, and 6.85, 2h d, j=8.5 hz. furthermore, the 1h nmr spectrum revealed the presence of -ch2-ch2-ch2-ch2-ch2-ch3 group, at delta 4.28, 2h, t, j=7.3 hz 1.76, 2h, m 1.46, 2h, m 1.38, 2h. m 1.37, 2h, m, and 0.94, 3h, t, j=7.3 hz. from an analysis of the foregoing spectral data, the structure of the aromatic polyketide was established as hexyl paraben, which was confirmed by detail analysis of the cosy, hmqc and hmbc experiments. a literature search revealed that this compound has been reported as synthetic compound.[0266] 2.3.1.2 structure elucidation of butyl paraben (mbi206-fp-f5h32)[0267] this compound was obtained as a colorless solid with uv max at 248 nm. the lcms analysis in the negative mode showed molecular ion at m/z 193 corresponding to the molecular formula 194. by comparison of the uv, ms and nmr data with that of hexyl paraben with mw 222, this compound was found to be the analogue of hexyl paraben. the only difference between them was only in the side chain. thus, the structure of butyl paraben was assigned to this compound with mw 194. a search in the literature suggested that this compound is also known as a synthetic compound.[0268] 2.3.2 herbicidal activity[0269] the pure compounds (butyl paraben [mbi206-fp-f5h32] and hexyl paraben [mbi206-fp-f5h40]) obtained from fraction 5 were tested at a concentration of 10 mg/ml. an untreated control (treated with deionized water), the formulation blank (at 3 percent v/v and 10 percent v/v), and a positive control (roundup super concentrate at a rate of 2.5 fluid ounces per gallon) are included in the test.[0270] the following treatments were tested as shown in table 5:table 5treatment regimentest descriptiontreat-vol (ml)mentsample iddescriptionof sample1utcutc (di water)22butyl paraben4 percent ethanol/water2(mbi206-fp-f5h32)(0.2 percent glycosperse)3hexyl paraben4 percent ethanol/water2(mbi206-fp-f5h40)(0.2 percent glycosperse)4blankformulation2blank @ 3 percent v/v5blankformulation2blank @ 10 percent v/v6positive controlpositive control2(roundup @ 2.5 fl oz/gal(ai: glyphosate @ 50.2 percent)) results obtained are set forth in table 6. table 6bioassay resultsday-1 readingday-7 readingrepli-controlreplicatecontrolcatesstdstdtreatment123avgdev123avgdev1 0 0 00.00.00000.00.022552518.311.5 251037.524.2 13.8 375757575.00.087.587.587.587.5 0.04 0 0 00.00.00000.00.05 0 0 00.00.00000.00.06 0 0 00.00.087.587.57583.3 7.2 based on the data presented in the table above, hexyl paraben was found to be the most potent herbicidal compound. [0271] 2.3.3 insecticidal acitivity[0272] the insecticidal activity of butyl paraben (mbi206-fp-f5h32) and hexyl paraben (mbi206-fp-f5h40) were tested in a laboratory assay using a 96-well diet overlay assay with 1st instar beet armyworm (spodoptera exigua) larvae using microtiter plates with 200 ul of solid, artificial beet armyworm diet in each well. one hundred (100) microliters of each test sample (containing 40 ug of sample) is pipetted on the top of the diet (one sample in each well), and the sample is let dry under flowing air until the surface is dry. each sample was tested in six replicates, and water and a commercial dipel product are used as negative and positive controls, respectively. one first instar larvae of the test insect (beet armyworm-spodoptera exigua) was placed in each well, and the plate was covered with plastic cover with airholes. the plates with insects were incubated at 26 degrees centigrade for 6 days with daily mortality evaluations. based on the results presented in table 7, hexyl paraben and butyl paraben resulted in 71 percent and 9 percent mortality, respectively.table 7insecticidal bioassay data for butyl paraben (mbi206-fp-f5h32)and hexyl paraben (mbi206-fp-f5h40) against 1st instarbeet army worm (spodoptera exigua).sample informationday 3day 4butyl paraben mbi206-fp-f5h32) @ 40 micro g/well8.938.9286hexyl parben (mbi206-fp-f5h40) @ 40 micro g/well50.0070.833 2 percent dipel0.000 4 percent dipel25.0025 8 percent dipel0.002516 percent dipel0.00032 percent dipel0.00064 percent dipel25.0010040 percent etoh14.2914.286dipel33.33100h200.000[0273] 2.3.4 nematicidal acitivity in vitro testing of butyl paraben (mbi206-fp-f5h32) and hexyl paraben (mbi206-fp-f5h40):[0274] the pure sample of butyl paraben and hexyl paraben was used in an in vitro 96-well plastic cell-culture plate bioassay. 15-20 nematodes in a 50 micro l water solution were exposed to 3 micro l of a 20 mg/ml peak concentrate for a 24 hour period at 25 degrees centigrade once the incubation period was completed, results were recorded based on a visual grading of immobility of the juvenile nematodes (j2's) in each well treated with compounds each treatment was tested in replicate of 4 wells. results are shown in table 8, which shows the results of two different 96-well plate extract bioassays of compounds. three controls are included in each trial 1 positive (1 percent avid) and 2 negative (dmso and water). trials (t1) was carried out using m. incognita nematodes and trail (t2) was carried out using m. hapla nematodes, the samples were dissolved in 100 percent dmso. the hexyl paraben (mbi206-fp-f5h40) showed the excellent control with the immobility of 93.75 percent against m. incognita as compared to butyl paraben with 81.25 percent immobility.table 8effect of hexyl paraben and butyl paraben on m. incognita andm. hapla. percent immobility percent immobilitymean percent sample information(trial # t1)(trial # t2)immobilitymbi206-fp-f5h327587.581.25(butyl paraben)mbi206-fp-f5h4087.510093.75(hexyl paraben)avid (1 percent)757575dmso6.2503.12water000[0275] 2.3.5 study of formation of parabens during formulation of the product[0276] in order to understand the formation of these parabens, the effect of change in alcohol in the formulation was taken into consideration. the different carbon chain alcohols were used in the formulation and the formation of the new parabens were monitored using lcms.[0277] four separate formulation experiments were performed using butanol, hexanol, octanol and cetyl alcohol and all other ingradients were kept same. the formulation products were extracted over the period of 2 days and 3 weeks. the crude extract obtained from these formulations were analysed by lcms. the corresponding parabens formed for all alcohols except for cetyl alcohol. the yield of the parabens was found to be the highest for butyl paraben, followed by hexyl paraben and then octyl paraben for the one day old formulation product. the analysis result even after 3 weeks remain the same order i.e., butyl parabenhexyl parabenoctyl paraben. thus, the rate of formation of these parabens such as butyl paraben, hexyl paraben and octyl paraben was found to depend on the carbon chain (number of carbon) of the solvent (alcohol) of the corresponding alcohol used in the formulation (butanol (c4)hexanol (c6)octanol (c8) etc). the formation of cetyl paraben was not detected till 3 weeks. the yields of these parabens were found to increase over the time.[0278] another set of experiments were carried out to understand the role of whole cell broth (wcb) in the formation of the new paraben analogues. in 4 different expt. with were carried out with following changes in the formulation-1 expt-1: propyl paraben (no methyl paraben)+wcb+other ingredientsexpt-2: methyl paraben (no propyl paraben) +wcb+other ingredientsexpt-3: no parabens (both)+wcb+other ingredients.expt-4: methyl paraben+propyl paraben+other ingredients+no wcb. the above formulations were extracted separately and the crude extract obtained were then analysed using lcms. the formation of the hexyl paraben was observed only in the first two experiments. thus, these experiments suggested that wcb plays a very important role in the formation of these parabens. 3. example 3 isolation of templazole a and b methods and materials [0283] the following procedure is used for the purification of templazole a and b extracted from cell culture of burkholderia sp (see fig. 3):[0284] the culture broth derived from the 10-l fermentation burkholderia (a396) in hy soy growth medium is extracted with amberlite xad-7 resin (asolkar et al., 2006) by shaking the cell suspension with resin at 225 rpm for two hours at room temperature. the resin and cell mass are collected by filtration through cheesecloth and washed with di water to remove salts.[0285] the resin, cell mass, and cheesecloth are then soaked for 2 h in acetone after which

the acetone is filtered and dried under vacuum using rotary evaporator to give the crude extract. the crude extract is then fractionated by using reversed-phase c18 vacuum liquid chromatography (h2o/ch3oh gradient 90:10 to 0:100 percent) to give 11 fractions. these fractions are then concentrated to dryness using rotary evaporator and the resulting dry residues are screened for biological activity using 96 well plate lettuce seeding assay. the active fractions are then subjected to reversed phase hplc (spectra system p4000 (thermo scientific) to give pure compounds, which are then screened in above mentioned bioassays to locate/identify the active compounds. to confirm the identity of the compound, additional spectroscopic data such as lc/ms and nmr is recorded.[0286] the active fraction 5 is purified further by using hplc c-18 column (phenomenex, luna 10u c18(2) 100 a, 250x30), water:acetonitrile gradient solvent system (0-10 min 80 percent aqueous ch3cn, 10-25 min 80-65 percent aqueous ch3cn, 25-50 min 65-50 percent aqueous ch3cn, 50-60 min 50-70 percent ch3cn, 60-80 min 70-0 percent aqueous ch3cn, 80-85 min 0-20 percent aqueous ch3cn) at 8 ml/min flow rate and uv detection of 210 nm, to give templazole b, retention time 46.65 min. the other active fraction 7 is also purified using hplc c-18 column (phenomenex, luna 10u c18(2) 100 a, 250x30), water:acetonitrile gradient solvent system (0-10 min 80 percent aqueous ch3cn, 10-25 min 80-60 percent aqueous ch3cn, 25-50 min 60-40 percent aqueous ch3cn, 50-60 min 40 percent ch3cn, 60-80 min 40-0 percent aqueous ch3cn, 80-85 min 0-20 percent aqueous ch3cn) at 8 ml/min flow rate and uv detection of 210 nm, to give templazole a, retention time 70.82 min.[0287] mass spectroscopy analysis of pure compounds is performed on a thermo finnigan lcq deca xp plus electrospray (esi) instrument using both positive and negative ionization modes in a full scan mode (m/z 100-1500 da) on a lcq deca xpplus mass spectrometer (thermo electron corp., san jose, calif.). thermo high performance liquid chromatography (hplc) instrument equipped with finnigan surveyor pda plus detector, autosampler plus, ms pump and a 4.6 mmx100 mm luna c18 5 micro m column (phenomenex). the solvent system consists of water (solvent a) and acetonitrile (solvent b). the mobile phase begins at 10 percent solvent b and is linearly increased to 100 percent solvent b over 20 min and then kept for 4 min, and finally returned to 10 percent solvent b over 3 min and kept for 3 min. the flow rate is 0.5 ml/min. the injection volume was 10 micro l and the samples are kept at room temperature in an auto sampler. the compounds are analyzed by lc-ms utilizing the lc and reversed phase chromatography. mass spectroscopy analysis of the present compounds is performed under the following conditions: the flow rate of the nitrogen gas was fixed at 30 and 15 arb for the sheath and aux/sweep gas flow rate, respectively. electrospray ionization was performed with a spray voltage set at 5000 v and a capillary voltage at 35.0 v. the capillary temperature was set at 400 degrees centigrade the data was analyzed on xcalibur software. the active compound templazole a has a molecular mass of 298 and showed m/z ion at 297.34 in negative ionization mode. the lc-ms chromatogram for templazole b suggests a molecular mass of 258 and exhibited m/z ion at 257.74 in negative ionization mode.[0288] 1h, 13c and 2d nmr spectra were measured on a bruker 500 mhz delta 600 mhz gradient field spectrometer. the reference is set on the internal standard tetramethylsilane (tms, 0.00 ppm).[0289] for structure elucidation of templazole a, the purified compound with a molecular weight 298 is further analyzed using a 500 mhz nmr instrument, and has 1h nmr delta values at 8.44, 8.74, 8.19, 7.47, 7.31, 3.98, 2.82, 2.33, 1.08 and has 13c nmr values of delta 163.7, 161.2, 154.8, 136.1, 129.4, 125.4, 123.5, 123.3, 121.8, 121.5, 111.8, 104.7, 52.2, 37.3, 28.1, 22.7, 22.7. templazole a has uv absorption bands at 226, 275, 327 nm, which suggested the presence of indole and oxazole rings. the molecular formula, c17h18n2o3, was determined by interpretation of 1h, 13c nmr and hresi ms data m/z 299.1396 (m+h)+ (calcd for c17h19n2o3, 299.1397), which entails a high degree of unsaturation shown by 10 double bond equivalents. the 13c nmr spectrum revealed signals for all 17 carbons, including two methyls, a methoxy, a methylene carbon, an aliphatic methine, an ester carbonyl, and eleven aromatic carbons. the presence of 3'-substituted indole was revealed from 1h-1h cosy and hmbc spectral data. the 1h-1h cosy and hmbc also indicated the presence of a carboxylic acid methyl ester group and a -ch2-ch-(ch3)2 side chain. from the detailed analysis of 1h-1h cosy, 13c, and hmbc data it was derived that the compound contained an oxazole nucleus. from the 2d analysis it was found that the iso-butyl side chain was attached at c-2 position, a carboxylic acid methyl ester at c-4 position and the indole unit at c-5 position to give templazole a.[0290] the second herbicidally active compound, templazole b, with a molecular weight 258 is further analyzed using a 500 mhz nmr instrument, and has 1h nmr delta values at 7.08, 7.06, 6.75, 3.75, 2.56, 2.15, 0.93, 0.93 and 13c nmr values of delta 158.2, 156.3, 155.5, 132.6, 129.5, 129.5, 127.3, 121.8, 115.2, 115.2, 41.2, 35.3, 26.7, 21.5, 21.5. the molecular formula, is assigned as c15h18n2o2, which is determined by interpretation of 1h, 13c nmr and mass data. the 13c nmr spectrum revealed signals for all 15 carbons, including two methyls, two methylene carbons, one aliphatic methine, one amide carbonyl, and nine aromatic carbons. the general nature of the structure was deduced from 1h and 13c nmr spectra that showed a para-substituted aromatic ring [delta 7.08 (2h, d, j=8.8 hz), 6.75 (2h, d, j=8.8 hz), and 132.7, 129.5, 115.2, 127.3, 115.2, 129.5]. the 1h nmr spectrum of this structure together with the 1h-1h cosy and hsqc spectra, displayed characteristic signals for an isobutyl moiety [delta 0.93 (6h, d, j=6.9 hz), 2.15 (1h, sept., j=6.9 hz), 2.57 (2h, d, j=6.9 hz). in addition, an olefinic/aromatic proton at (delta 7.06, s), and a carbonyl carbon group (delta 158.9) were also found in the 1h and 13c nmr spectra. on inspection of the hmbc spectrum, the h-1' signal in the isobutyl moiety correlated with the olefinic carbon (c-2, delta 156.3), and the olefinic proton h-4 correlated with (c-5, delta 155.5 c-2, 156.3 and c-1?, 41.2). the methylene signal at delta 3.75 correlated with c-5, c-4 as well as the c-2? of the para-substituted aromatic moiety. all these observed correlations suggested the connectivity among the isobutyl, and the para-substituted benzyl moieties for the skeleton of the structure as shown. in addition, the carboxamide group is assigned at the para position of the benzyl moiety based on the hmbc correlation from the aromatic proton at h-4?and h-6? position. thus, based on the above data, the structure was designated as templazole b. 4. example 4 isolation of fr901228 [0291] the whole cell broth from the fermentation of burkholderia sp. in an undefined growth medium is extracted with amberlite xad-7 resin (asolkar et al., 2006) by shaking the cell suspension with resin at 225 rpm for two hours at room temperature. the resin and cell mass are collected by filtration through cheesecloth and washed with di water to remove salts. the resin, cell mass, and cheesecloth are then soaked for 2 h in acetone after which the acetone is filtered and dried under vacuum using rotary evaporator to give the crude extract. the crude extract is then fractionated by using reversed-phase c18 vacuum liquid chromatography (h2o/ch3oh gradient 90:10 to 0:100 percent) to give 11 fractions. these fractions are then concentrated to dryness using rotary evaporator and the resulting dry residues are screened for biological activity using both insect bioassay as well as herbicidal bioassay. the active fractions are then subjected to reversed/normal phase hplc (spectra system p4000 thermo scientific) to give pure compounds, which are then screened in herbicidal, insecticidal and nematicidal bioassays described below to locate/identify the active compounds. to confirm the identity of the compound, additional spectroscopic data such as lc/ms and nmr is recorded.[0292] mass spectroscopy analysis of active peaks is performed on a thermo finnigan lcq deca xp plus electrospray (esi) instrument using both positive and negative ionization modes in a full scan mode (m/z 100-1500 da) on a lcq deca xpplus mass spectrometer (thermo electron corp., san jose, calif.). thermo high performance liquid chromatography (hplc) instrument equipped with finnigan surveyor pda plus detector, autosampler plus, ms pump and a 4.6 mmx100 mm luna c18 5 micro m column (phenomenex). the solvent system consists of water (solvent a) and acetonitrile (solvent b). the mobile phase begins at 10 percent solvent b and is linearly increased to 100 percent solvent b over 20 min and then kept for 4 min, and finally returned to 10 percent solvent b over 3 min and kept for 3 min. the flow rate is 0.5 ml/min. the injection volume is 10 micro l and the samples are kept at room temperature in an auto sampler. the compounds are analyzed by lc-ms utilizing the lc and reversed phase chromatography. mass spectroscopy analysis of the present compounds is performed under the following conditions: the flow rate of the nitrogen gas is fixed at 30 and 15 arb for the sheath and aux/sweep gas flow rate, respectively. electrospray ionization is performed with a spray voltage set at 5000 v and a capillary voltage at 35.0 v. the capillary temperature is set at 400 degrees centigrade the data is analyzed on xcalibur software. based on the lc-ms analysis, the active insecticidal compound from fraction 6 has a molecular mass of 540 in negative ionization mode.[0293] for structure elucidation, the purified insecticidal compound from fraction 6 with molecular weight 540 is further analyzed using a 500 mhz nmr instrument, and has 1h nmr values at 6.22, 5.81, 5.69, 5.66, 5.65, 4.64, 4.31, 3.93, 3.22, 3.21, 3.15, 3.10, 2.69, 2.62, 2.26, 2.23. 1.74, 1.15, 1.12, 1.05, 1.02 and has 13c nmr values of 172.99, 172.93, 169.57, 169.23, 167.59, 130.74, 130.12, 129.93, 128.32, 73.49, 62.95, 59.42, 57.73, 38.39, 38.00, 35.49, 30.90, 30.36, 29.26, 18.59, 18.38, 18.09, 17.93, 12.51. the nmr data indicates that the compound contains amino, ester, carboxylic acid, aliphatic methyl, ethyl, methylene, oxymethylene, methine, oxymethine and sulfur groups. the detailed 1d and 2d nmr analysis confirms the structure for the compound as fr901228 as a known compound. 5. example 5 isolation of templamide a, b, fr901465 and fr901228 methods and materials [0294] the culture broth derived from the 10-l fermentation burkholderia (a396) in hy soy growth medium is extracted with amberlite xad-7 resin (asolkar et al., 2006) by shaking the cell suspension with resin at 225 rpm for two hours at room temperature. the resin and cell mass are collected by filtration through cheesecloth and washed with di water to remove salts. the resin, cell mass, and cheesecloth are then soaked for 2 h in acetone after which the acetone is filtered and dried under vacuum using rotary evaporator to give the crude extract. the crude extract is then fractionated by using reversed-phase c18 vacuum liquid chromatography (h2o/ch3oh gradient 90:10 to 0:100 percent) to give 11 fractions. these fractions are then concentrated to dryness using rotary evaporator and the resulting dry residues are screened for biological activity using 96 well plate lettuce seeding (herbicidal) and early 3rd instar beet armyworm (insecticidal) assay. the active fractions are then subjected to repeatedly to reversed phase hplc separation (spectra system p4000 (thermo scientific) to give pure compounds, which are then screened in above-mentioned bioassays to locate/identify the active compounds. to confirm the identity of the compound, additional spectroscopic data such as lc/ms, hrms and nmr are recorded.[0295] the active fraction 6 is purified further by using hplc c-18 column (phenomenex, luna 10u c18(2) 100 a, 250x30), water:acetonitrile gradient solvent system (0-10 min 80 percent aqueous ch3cn, 10-25 min 80-65 percent aqueous ch3cn, 25-50 min 65-50 percent aqueous ch3cn, 50-60 min 50-70 percent aqueous ch3cn, 60-80 min 70-0 percent aqueous ch3cn, 80-85 min 0-20 percent aqueous ch3cn) at 8 ml/min flow rate and uv detection of 210 nm, to give templamide a, retention time 55.64 min and fr901465, retention time 63.59 min and fr90128, retention time 66.65 min respectively. the other active fraction 6 is also purified using hplc c-18 column (phenomenex, luna 10u c18(2) 100 a, 250x30), water:acetonitrile gradient solvent system (0-10 min 70-60 percent aqueous ch3cn, 10-20 min 60-40 percent aqueous ch3cn, 20-50 min 40-15 percent aqueous ch3cn, 50-75 min 15-0 percent ch3cn, 75-85 min 0-70 percent aqueous ch3cn) at 8 ml/min flow rate and uv detection of 210 nm, to give templamide b, retention time 38.55 min.[0296] mass spectroscopy analysis of pure compounds is performed on a thermo finnigan lcq deca xp plus electrospray (esi) instrument using both positive and negative ionization modes in a full scan mode (m/z 100-1500 da) on a lcq deca xpplus mass spectrometer (thermo electron corp., san jose, calif.). thermo high performance liquid chromatography (hplc) instrument equipped with finnigan surveyor pda plus detector, autosampler plus, ms pump and a 4.6 mmx100 mm luna c18 5 micro m column (phenomenex) is used. the solvent system consists of water (solvent a) and acetonitrile (solvent b). the mobile phase begins at 10 percent solvent b and is linearly increased to 100 percent solvent b over 20 min and then kept for 4 min, and finally returns to 10 percent solvent b over 3 min and kept for 3 min. the flow rate is 0.5 ml/min. the injection volume is 10 micro l and the samples are kept at room temperature in an auto sampler. the compounds are analyzed by lc-ms utilizing the lc and reversed phase chromatography. mass spectroscopy analysis of the present compounds is performed under the following conditions: the flow rate of the nitrogen gas is fixed at 30 and 15 arb for the sheath and aux/sweep gas flow rate, respectively. electrospray ionization is performed with a spray voltage set at 5000 v and a capillary voltage at 45.0 v. the capillary temperature is set at 300 degrees centigrade the data is analyzed on xcalibur software. the active compound templamide a has a molecular mass of 555 based on the m/z peak at 556.41 [m+h]+ and 578.34 [m+na]+ in positive ionization mode. the lc-ms analysis in positive mode ionization for templamide b suggests a molecular mass of 537 based m/z ions at 538.47 [m+h]+ and 560.65 [m+na]+. the molecular weight for the compounds fr901465 and fr901228 are assigned as 523 and 540 respectively on the basis of lcms analysis.[0297] 1h, 13c and 2d nmr spectra are measured on a bruker 600 mhz gradient field spectrometer. the reference is set on the internal standard tetramethylsilane (tms, 0.00 ppm).[0298] for structure elucidation of templamide a, the purified compound with molecular weight 555 is further analyzed using a 600 mhz nmr instrument, and has 1h nmr delta values at 6.40, 6.39, 6.00, 5.97, 5.67, 5.54, 4.33, 3.77, 3.73, 3.70, 3.59, 3.47, 3.41, 2.44, 2.35, 2.26, 1.97, 1.81, 1.76, 1.42, 1.37, 1.16, 1.12, 1.04 and has 13c nmr values of delta 173.92, 166.06, 145.06, 138.76, 135.71, 129.99, 126.20, 123.35, 99.75, 82.20, 78.22, 76.69, 71.23, 70.79, 70.48, 69.84, 60.98, 48.84, 36.89, 33.09, 30.63, 28.55, 25.88, 20.37, 18.11, 14.90, 12.81, 9.41. the 13c nmr spectrum exhibits 28 discrete carbon signals which are attributed to six methyls, four methylene carbons, and thirteen methines including five sp2, four quaternary carbons. the molecular formula, c28h45no10, is determined by interpretation of 1h, 13c nmr and hresi ms data. the detailed analysis of 1h-1h cosy, hmbc and hmqc spectral data reveals the following substructures (i-iv) and two isolated methylene and singlet methyl groups. these substructures are connected later using the key hmbc correlations to give the planer structure for the compound, which has been not yet reported in the literature and designated as templamide a. this polyketide molecule contains two tetrahydropyranose rings, and one conjugated amide.[ftimg=60402176] substructures i-iv assigned by analysis of 1d and 2d nmr spectroscopic data.[0299] the (+) esims analysis for the second herbicidal compound, shows m/z ions at 538.47 [m+h]+ and 560.65 [m+na]+ corresponding to the molecular weight of 537. the molecular formula of c28h43no9 is determined by interpretation of the esims and nmr data analysis. the 1h and 13c nmr of this compound is similar to that of templamide a except that a new isolated -ch2- appear instead of the non-coupled methylene group in templamide a. the small germinal coupling constant of 4.3 hz is characteristic of the presence of an epoxide methylene group. the presence of this epoxide is further confirmed from the 13c nmr shift from 60.98 in templamide a to 41.07 in compound with mw 537. the molecular formulae difference between these two compounds is reasonably explained by elimination of the water molecule followed by formation of epoxide. thus, on the basis of based nmr and ms analysis the structure for the new compound was assigned and was designated as templamide b.[0300] for structure elucidation, the purified compound from fraction 6 with molecular weight 523 is further analyzed using a 600 mhz nmr instrument, and has 1h nmr values at 6.41, 6.40, 6.01, 5.98, 5.68, 5.56, 4.33, 3.77, 3.75, 3.72, 3.65, 3.59, 3.55, 3.50, 2.44, 2.26, 2.04, 1.96, 1.81, 1.75, 1.37, 1.17, 1.04 and has 13c nmr values of 172.22, 167.55, 144.98, 138.94, 135.84, 130.14, 125.85, 123.37, 99.54, 82.19, 78.28, 76.69, 71.31, 70.13, 69.68, 48.83, 42.52, 36.89, 33.11, 30.63, 25.99, 21.20, 20.38, 18.14, 14.93, 12.84. the detailed 1h and 13c nmr analysis of compound suggested that this compound was quite similar to compound templamide b the only difference was in the ester side chain an acetate moiety was present instead of a propionate moiety in the side chain. the detailed 1d and 2d nmr analysis confirm the structure for the compound as fr901465 as a known compound.[0301] based on the lc-ms analysis, the other compound from fraction 6 has a molecular mass of 540 in negative ionization mode. for structure elucidation, the purified compound from fraction 5 with molecular weight 540 is further analyzed using a 500 mhz nmr instrument, and has 1h nmr values at 6.22, 5.81, 5.69, 5.66, 5.65, 4.64, 4.31, 3.93, 3.22, 3.21, 3.15, 3.10, 2.69, 2.62, 2.26, 2.23. 1.74, 1.15, 1.12, 1.05, 1.02 and has 13c nmr values of 172.99, 172.93, 169.57, 169.23, 167.59, 130.74, 130.12, 129.93, 128.32, 73.49, 62.95, 59.42, 57.73, 38.39, 38.00, 35.49, 30.90, 30.36, 29.26, 18.59, 18.38, 18.09, 17.93, 12.51. the nmr data indicates that the compound

contains amino, ester, carboxylic acid, aliphatic methyl, ethyl, methylene, oxymethylene, methine, oxymethine and sulfur groups. the detailed 1d and 2d nmr analysis confirm the structure for the compound as fr901228 as a known compound.[0302] the molecular weight for the other active compound (f8h17) from fraction f8 was assigned as 1080 based on the molecular ion peak at 1081.75 (m+h) in positive esi mode and further confirmed by the negative esims with base peak at 1079.92. this compound showed uv absorption at 234 nm. example 6 burkholderia sp. as an algicide [0303] burkholderia sp. a396 is grown in an undefined mineral medium for 5 days (25 degrees centigrade, 200 rpm). cells are separated from the supernatant by centrifugation at 8,000 g, and the cell-free supernatant is used to test the algaicidal activity against a unicellular algal species (p. subcapitata) and a blue-green alga species (anabaena sp.). a specified increasing amount of supernatant is added into wells of a 24-well polystyrene plate that has the specified algae growing in 750 micro liters of gorham's medium to determine the dose-response curve for the test supernatant on each algae type. each treatment is done in two replicates, and the blank growth medium is used as a negative control. the plate is closed with a lid and incubated for 48 hours under constant growth light at room temperature. after 48 hours, the fluorescence (at 700 nm) of the suspension in each well is measured using a spectramax gemini xs plate reader, and the reduction in fluorescence compared with the un-treated control is converted into percent control of algal growth. results presented in table 9 below show excellent control of unicellular algae and good control or algistatic effect on blue-green algae.table 9control of two algal species by burkholderia a396 cell-free brothmeasured as a reduction of fluorescence at 700 nm. percent controlamount of broth per wellp. subcapitataanabaena sp. 0 micro l0010 micro l74.20.020 micro l84.10.030 micro l85.50.040 micro l88.30.050 micro l90.60.0100 micro l 94.636.4 example 7 control of chlamydomonas reinhardtii by crude extract and fractions of burkholderia sp [0304] fractions obtained from the fractionation of crude extract of burkholderia sp. were tested for algaecide activity against chlamydomonas reinhardtii. an increasing volume of fraction (with concentration of 20 mg/ml in ethanol) was added to a clear 48 well polystyrene plate with 750 micro liters of the specified algae growing. each treatment was done in two replicates and the solvent (ethanol) used as a negative control. the plate was closed with a lid and incubated for 72 hours under constant light at room temperature. after 72 hours, the fluorescence (at 680 nm) of the suspension in each well was measured using a spectramax m2 plate reader, and the reduction in fluorescence compared with the negative control was converted into percent control of algal growth. each sample was visually compared to the negative control a well that was visually clearer than the negative control was scored as active.[0305] results presented in table 10 below shows control of the specified algae in fractions 5, 6, 7, 8, and 9. tests were run in two replicates and percent control was calculated as a reduction of fluorescence at 680 nm compared with the negative control. each sample was visually compared to the negative control a well that was visually clearer than the negative control was scored as active.table 10control of chlamydomonas reinhardtii by crude extract and fractions ofburkholderia sp. (mbi 206). micro l of sample persample750 micro l of algae percent inhibitionvisualsolvent blank22.50.00not active110.00not active50.00not activecrude extract22.597.10active1189.54active590.82activembi 206f122.5-74.47not active1146.47not active546.21not activembi 206f222.512.64not active11-214.35not active5-297.56not activembi 206f322.5-143.92not active11-740.16not active532.68not activembi 206f422.5-98.80not active11-155.41not active558.51not activembi 206f522.592.89active1179.45active571.60weakmbi 206f622.594.88active1196.33active586.45activembi 206f722.597.32active1198.96active597.89activembi 206f822.594.35active1132.17weak5-13.51not activembi 206f922.585.35active1196.49active597.73activembi 206f1022.550.30not active1148.54not active5-108.24not activembi 206f1122.5-121.50not active11-16.21not active536.46not active example 8 algicidal effect of crude extract and various fractions obtained from burkholderia sp. against p. subcapitata [0306] the crude extract as well as the fractions obtained from burkholderia sp. was tested for algicidal activity against a unicellular algal species (p. subcapitata). an increasing volume of pure ethanol solution derived by re-dissolving a known amount of material (10 mg/ml concentration) corresponding to each sample was added into wells of a 24-well polystyrene plate that has the specified algae growing in 750 micro liters of gorham's medium to determine the algicidal effect of sample (extract/fractions) on unicellular algae. each treatment was done in three replicates, and pure ethanol was used as a negative control. after mixing, the plate was closed with a lid and incubated for 48 hours under constant growth lights at room temperature. after 48 hours, the fluorescence (at 700 nm) of the suspension in each well was measured using a spectramax gemini xs plate reader, and the reduction in fluorescence compared with the un-treated control was converted into percent control of algal growth. results presented in table 11 below show excellent control of unicellular algae with fractions f5, f6 and f7 whereas no substantial algicidal effect was obtained with other samples.table 11algicidal effect of various samples obtained from burkholderia sp. thebioassay was run in three replicates using p. subcapitata as thetest organism.samplesample micro l percent controlresultsmbi206f150.0not active1033.9not active2058.2not activembi206f2535.7not active106.0not active2031.8not activembi206f3540.9not active1066.4not active2068.5not activembi206f4546.8not active1069.8weak2084.7activembi206f5549.9not active1071.5weak2095.4activembi206f6562.7not active1074.7weak2090.7activembi206f7540.1not active1088.6active2093.0activembi206f8536.8not active1050.0not active2065.9not activembi206f9566.3not active1040.7not active2051.8not activembi206f10526.8not active1027.5not active2032.9not activembi206f11525.9not active1032.8not active2039.2not activecrude extract545.6not active1069.6weak2070.0weaksolvent blank50.0not active100.0not active200.0not active example 9 control of chlamydomonas reinhardtii by purified compounds from burkholderia sp. fermentation broth [0307] purified compounds from burkholderia sp. fermentation broth was tested for algaicidal activity against chlamydomonas reinhardtii. an increasing volume of the purified compounds (20 mg/ml in ethanol) was added to a clear 48 well polystyrene plate with 750 micro liters of the specified algae growing. each treatment was done in two replicates and the solvent used as a negative control. the plate was closed with a lid and incubated for 72 hours under constant light at room temperature. after 72 hours the fluorescence (at 680 nm) of the suspension in each well was measured using a spectramax m2 plate reader, and the reduction in fluorescence compared with the negative control was converted into percent control of algal growth. each sample was visually compared to the negative control a well that was visually clearer than the negative control was scored as active. results presented in table 12 below shows control of the specified algae in samples containing templamide b (mw 537), fr901228 (mw 540), templazole a (mw 298), and f8h18 (mw 1080). tests were run in two replicates and percent. control was calculated as a reduction of fluorescence at 680 nm compared with the negative control. each sample was visually compared to the negative control a well that was visually clearer than the negative control was scored as active.table 12control of chlamydomonas reinhardtii by purified compounds fromburkholderia sp. fermentation broth (mbi 206). micro l of sampleper 750 micro l ofsamplealgae percent controlvisualsolvent blank22.50not active110not active50not activetemplamide b22.598.29620264active(mw 537)1199.34438783active595.05204335activefr901465 (mw22.5-3.887169203not active523)11-33.58351827not active5-86.58233289not activetemplamide a22.5-151.6466844not active(mw 555)11-21.16166036not active5-67.61183948not activefr901228 (mw22.598.71299647active540)1199.35532773active589.48079462activetemplazole b22.5-30.78693813not active(mw 258)1152.94712906not active5-102.0883867not activetemplazole a22.598.1523303active(mw 298)1198.72823743active599.18429591activetemplazole a22.595.71173214active(mw 298)1198.31330291active598.69251947activef8h18 (mw22.594.98474386active1080)1182.90378804active5-21.38764258not active templazole a was tested twice in this bioassay. example 10 control of scenedesmus quadricauda by heat-treated burkholderia sp. fermentation supernatant [0308] burkholderia sp. was grown in a fermentation broth as previously described. the broth was heat treated at the end of the fermentation to inactivate all cells. the cell free supernatant was tested for algaecide activity against scenedesmus quadricauda. an increasing volume of supernatant was added to a clear 48 well polystyrene plate with 750 micro liters of the specified algae growing. each treatment is done in two replicates and the blank growth medium used as a negative control. the plate is closed with a lid and incubated for 72 hours under constant light at room temperature. after 72 hours the fluorescence (at 680 nm) of the suspension in each well is measured using a spectramax m2 plate reader, and the reduction in fluorescence compared with the untreated control is converted into percent control of algal growth. results presented in table 13 below shows control of the specified algae. tests were run in two replicates and percent control was calculated as a reduction of fluorescence at 680 nm compared with the untreated control.table 13control of scenedesmus quadricauda by supernatant of heat killburkholderia sp. (mbi 206).materialvolume (micro l) percent inhibitionmbi 20600120522st hk1097.21347952tgai2099.361671613099.428442034099.507982315098.9013604510095.9474484 example 11 control of oscillatoria tenius by heat kill burkholderia sp. fermentation supernatant [0309] burkholderia sp. was grown in a fermentation broth as previously described. the broth was heat treated at the end of the fermentation to inactivate all cells. the cell free supernatant was tested for algaecide activity against oscillatoria tenius. an increasing volume of supernatant was added to a clear 48 well polystyrene plate with 750 micro l of the specified algae growing. each treatment is done in two replicates and the blank growth medium used as a negative control. the plate is closed with a lid and incubated for 72 hours under constant light at room temperature. after 72 hours the absorbance at 680 nm is measured in each well using a spectramax m2 plate reader, and the reduction in absorbance compared with the untreated control is converted into percent control of algal growth. results presented in table 14 below shows control of the specified algae. tests were run in two replicates and percent control was calculated as a reduction of absorbance at 680 nm compared with the untreated control.table 14control of oscillatoria tenius by supernatant of heat killburkholderia sp. (mbi 206).materialvolume (micro l) percent controlmbi 20600120522st hk106.177042802tgai2025.124131083010.565835344037.700865275045.4731362710036.96205601 example 13 efficacy of burkholderia sp. against two-spotted spidermites infesting marigold plants [0310] marigold, tagetes erecta, grown in 6? containers were infested with two-spotted spidermite, tetranychus urticae, by placing leaves extracted from host plant (cotton) onto the test plants. approximately ten (10) leaves with 30-40 spidermites present were placed on various parts of test plants for fourteen (14) days. test plants were individually caged following infestation to allow spidermite population to build. host leaves were removed from test plant. no pesticides were applied to test plants prior to study application. spray application was applied using a gen3 spray booth calibrated to 100 gpa. each replicate was individually caged immediately following application. cage description a wire tomato cage 30? heightx12? diameter, covered with antivirus insect screening. test plants received natural lighting for duration of trial. test plants were soil watered every twenty-four (24) hours as needed. plants were evaluated prior to application (pre-count), 3, 5 and 7 days after application. four leaves were randomly selected and harvested from each replicate equaling a 6 cm sq total surface area evaluated. actual count was recorded on live and dead two-spotted spidermite. burkholderia sp. showed slight activity against both tssm nymphs and adults. this activity shows potential for biopesticide formulations against tssm. the treatments also reduced the number of live mites observed on samples. this is compelling evidence that mbi206 shows potential for biopesticide formulations against tssm. example 14 efficacy of burkholderia sp. fermentation supernatant against two-spotted spidermites infesting marigold plants [0311] marigold plants grown in 6? containers were infested with two-spotted spidermite by placing leaves extracted from host plant (cotton) onto the test plants. eight to ten (8-10) leaves with approximately 30-40 two-spotted spidermite present were placed on various parts of test plants for fourteen (14) days. test plants were individually caged following infestation to allow mite population to build. host leaves were removed from test plant. no pesticides were applied to test plants prior to study application. plants were treated with either 100 percent supernatant or 10 percent supernatant (in water) spray application was applied to full coverage with no run-off using a disposable hand-sprayer. test plants were placed research greenhouse on a wire-mesh raised bench and arranged in a complete randomized block design. research greenhouse is monitored by procom, micro grow greenhouse system temperature control system. environmental conditions averaged high temperature 85f to low temperature of 72f during trial dates. average humidity levels ranged from 40 percent to 75 percent. test plants received natural lighting for duration of trial. test plants were soil watered every twenty-four (24) hours as needed. plants were evaluated prior to application (pre-count), 3, 5, 7 and 14 days after application. evaluations were taken on a 6 cm square total area per replicate. actual count was recorded on live/dead two-spotted spidermite nymph and live/dead two-spotted spidermite adult. example 14 efficacy of burkholderia sp. formulation (mbi 206) for control of two spotted spidermite (tsm) in strawberry-field data [0312] the efficacies of five traditional chemistry-derived and mbi 206 were evaluated for tsm control under field conditions. strawberry festival transplants were set in the field in plastic mulched beds, 13 inches high and 27 inches across the top, and with 4 ft bed spacing. overhead irrigation was applied for 10 days after setting to aid in establishment of the transplants. trickle irrigation was used for the remainder of the experiment. each 12.5-ft. plot consisted of 20 plants in two ten-plant rows per bed. plots were infested from a laboratory colony in four sessions with 10 to 20 motile tsm, per plant. each session accomplished the infestation of one block of the experiment. the experiment consisted of treatments of various rates and schedules of application of miticides, some combined with an adjuvant, and a non-treated check. treatments were replicated four times in a rcb design. savey and acramite treatments were applied before tsm densities reached threshold levels (6 january) the remainder of the treatment programs began 2 wks later. treatments were applied using a hand-held sprayer with a spray wand outfitted with a nozzle containing a 45-degree core and a number four disc.[0313] the sprayer was pressurized by co2, to 40 psi, and calibrated to deliver 100 gal per acre. pre-treatment samples were taken on day 1 and sampling continued weekly through 2 wks after the last application of treatments. samples consisted of ten randomly selected leaflets per plot and were collected from the middle one-third stratum of the plants. samples were transported to the laboratory where motile and egg tsm were brushed from the leaflets onto rotating sticky discs and counted on 1/10 of the disc surface to estimate average numbers per leaflet. distinctions could not be made between viable and non-viable eggs, thus total eggs were recorded. mbi 206 at the highest rate (3 gal/acre) shows decrease in the number of eggs at a level comparable to at least two of the chemical controls.table 15effects of various formulations on tsm egg productiontreatment/rateno. egg tsm/leafletformulationamt/acreday 1day 9day 16day 22day 30day 37day 44day 52day 58non-treated-15.51027.512.325.3122181.5587559bifenazate + blend of1lb.3.8660.88.320.532866.5alkyl arylpolyoxylkane ethers,free fatty acids anddimethyl polysiloxanenonionic spreader16.0fl. oz.6.815.511.816.831.5148.3114321525.35 percent fenpyroximate32fl. oz.11.312.83519.31124.517.849.8213ew5 percent fenpyroximate ec32fl. oz.9.311.812.312.5134.520.828.597.3hexythiazox6oz.28.515172271.5128.5281.5393.5mbi 206 + blend of1gal.12.3-201212.565.583.3292478alkyl arylpolyoxylkane ethers,free fatty acids anddimethyl polysiloxanembi 206 + blend of3gal.3.3-8.813.52154.372158301.3alkyl arylpolyoxylkane ethers,free fatty acids anddimethyl polysiloxane example 15 control of citrus rust mites (phyllocoptruta oleivora) on citrus under filed conditions [0314] mbi 206 (formulated broth of burkhoderia sp.) was sprayed on valencia sweet orange at 1, 2, and 3 gal/acre in combination with 0.25 percent v/v/ of li-700 (surfactant) and delivered in a volume of 100 gpa. a single treatment was delivered and compared to an untreated sample. mite counts were performed pre-treatment, and then at 1, 7, 10 and 14 days after treatment. mite counts were an average of 10 fruits per treatment per sampling point. a reduction in the number of mites present in the mbi 206 treatments was observed at 14 days after treatments with 1 and 2 gal/acre mbi 206 (approximately 6-8 mites per count), when compared to the untreated control

(approx. 16 mites per count). example 16 insecticidal (sucking contact) activity of templamide, fr901465 and fr901228 against milkweed bugs [0315] the insecticidal activity of the pure compounds templamide b (mbi 206 mw 537), fr 901465 (mbi 206 mw 523) and fr901228 (mbi 206 mw 540) were tested in a laboratory assay using a sucking contact bioassay system. the compounds were dissolved in 100 percent ethanol to concentrations of 1 mg/ml. individual 4th instar milkweed bugs, penultimate nymph, larvae were placed in 5c rubbermaid container with 2 sunflower seeds in each tub and 1 water cup (water in contact cup with cotton wick) into each tub. a hamilton micropipette was used to apply 1 micro l (1 drop) of compound onto abdomen of milkweed bugs (mwb) of each larvae. tubs were place into the rubbermaid container and cap with mesh lid. eight larvae per sample were treated. the assay was incubated at 25 degrees centigrade, 12 h light/12 h dark. larvae were scored at 4 and 7 day after application. all the three compounds exhibited contact activity against mwb, while not all insects died but many were clearly affected and unable to move. most of the mwb on day 7 had molted which suggests that the compounds may inhibit molting or affect normal mwb development. thus, fr 901465 provided a better (87.5 percent) control of milkweed bugs, than fr 901228 (mw 540) and templamide b (fig. 4). example 17 insecticidal activity of pure compounds against lygus hesperus late 2nd/early 3rd instar [0316] the insecticidal activity of the four compounds, templamide a, templamide b, fr901465 and fr901228 isolated from burkholderia were tested in a laboratory assay using a 12 well plate with treated green beans bioassay system. the compound was dissolved in 100 percent ethanol to concentrations of 1 mg/ml and 500 micro l of this sample was added to 3.5 ml of water to make a total volume of 4 ml containing 0.25 mg/ml concentration of the compound. green beans were washed earlier in bleach solution and then sat in water to rinse. beans were dried before using and then were cut with scissors to fit into wells of 12-well plate. with the help of forceps the beans were dunked into a 15 ml plastic falcon tube containing each treatment and then submerged in treatment for exactly one min. one bean part was put into each well and then individual late 2nd/early 3rd instar lygus hesperus, were placed in wells with help of brush. plate sealer was used to cover tray and hole poked into the plate sealer for aeration. the numbers of lygus/well were counted and plates were placed on brench top. larvae were scored at 24, 48 and 120 hours after application. based on the results presented in fig. 5, compound fr 901465, was found to be the most potent with mortality of 91.2 percent, followed by templamide with b 69.2 percent, and fr901228 with 51.7 percent. the templamide a was inactive in the lygus feeding bioassay. the positive control used in this testing was avid (avemectin) at the rate of 13 micro l/10 ml. example 18 nematicidal activity of fr901228 [0317] the pure sample of fr 901228 was tested using an in vitro 96-well plastic cell-culture plate bioassay. 15-20 nematodes in a 50 micro l water solution were exposed to 3 micro l of a 20 mg/ml solution of fr 901228 for a 24 hour period at 25 c. once the incubation period was completed, results were recorded based on a visual grading of immobility of the juvenile nematodes (j2's) in each well treated with compounds each treatment was tested in replicate of 4 wells. three controls are included in each trial 1 positive (1 percent avid) and 2 negative (dmso and water). trials (t1) was carried out using free living nematodes (fln) and trail (t2) was carried out using m. incognita nematodes, the samples were dissolved in 100 percent dmso. fr 901228 (mw 540) showed the excellent control with immobility of 75 percent against free living nematodes as compared to m. incognita with 75 percent immobility. microorganism deposit [0318] the following biological material has been deposited under the terms of the budapest treaty with the agricultural research culture collection (nrrl), 1815 n. university street, peoria, ill. 61604 usa, and given the following number:depositaccession numberdate of depositburkholderia sp. a396nrrl b-50319sep. 15, 2009[0319] the strain has been deposited under conditions that assure that access to the culture will be available during the pendency of this patent application to one determined by the commissioner of patents and trademarks to be entitled thereto under 37 c.f.r. 1.14 and 35 u.s.c. 122. the deposit represents a substantially pure culture of the deposited strain. the deposit is available as required by foreign patent laws in countries wherein counterparts of the subject application, or its progeny are filed. however, it should be understood that the availability of a deposit does not constitute a license to practice the subject invention in derogation of patent rights granted by government action.[0320] although this invention has been described with reference to specific embodiments, the details thereof are not to be construed as limiting, as it is obvious that one can use various equivalents, changes and modifications and still be within the scope of the present invention.[0321] various references are cited throughout this specification, each of which is incorporated herein by reference in its entirety. literature cited anderson, et al. 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Search 4: fn=(50961099 or 57466012 or 58695160 or 34356244 or 2153304 or 28628927 or 29966567 or 41744035 or 49470779 or 30353515) (Results 10)

Search 5: TAC=(Burkholderia and pesticidal) and CPC=(C12P17/187 OR C12P17/188) (Results 2)

Search 6: TAC=(Burkholderia) and CPC=(C12P17/187 OR C12P17/188) (Results 4)

1) Family number: 42088203 (US2010261878A)

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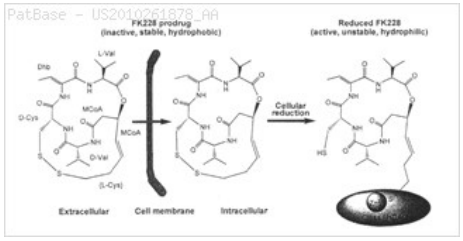
Title: SEQUENCES FOR FK228 BIOSYNTHESIS AND METHODS OF SYNTHESIZING FK228 AND FK228 ANALOGS

Abstract: Source: US2010261878A Polynucleotides encoding the polypeptides involved in biosynthesis of FK 228 and those involved in synthesis of a novel FK228 analog, thailandepsin are disclosed herein. Also provided are methods of making FK228, thailandepsin and analogs of these molecules and methods of using these FK228 analogs. *Chromobacterium* and ***Burkholderia*** gene inactivation mutants are provided. Methods of forming a disulfide bond in a chemical are also disclosed.

Classifications:
International (IPC 8-9): C07K11/02 C07K5/10 C12N1/20 C12N1/21 C12N15/52 C12P1/00 C12P17/18 C12P21/02 (Advanced/Invention);
C07K11/00 C12N1/20 C12N1/21 C12N15/52 C12P17/18 (Core/Invention)
CPC: C07K11/02 C12N15/52 C12P17/187
European: C07K11/02 C12N15/52 C12P17/18D3
US: 435/41 435/69.1 435/69.100S 435/71.3 530/330



Family:

Publication number	Publication date	Application number	Application date
US2010261878 AA	20101014	US20080526202	20080208
US8148102 BB	20120403	US20080526202	20080208
WO08098199 A2	20080814	WO2008US53473	20080208
WO08098199 A3	20090226	WO2008US53473	20080208

Priority:
US20070888851P 20070208 WO2008US53473 20080208 US20080526202 20080208

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Assignee(s): UWM RESEARCH FOUNDATION INC ; NATIONAL INSTITUTES OF HEALTH NIH US DEPT OF HEALTH AND HUMAN SERVICES DHHS US GOVERNMENT

Inventor(s): (std): CHENG YI QIANG

Agent(s): MICHAEL BEST AND FRIEDRICH LLP; FAHRLANDER JILL A

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BR BW BY BZ CA CF CG CH CI CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PG PH PL PT RO RS RU SC SD SE SG SI SK SL SM SN SV SY SZ TD TG TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

2) Family number: 50961099 (US2012100236A)

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Title: CHROMOBACTERIUM BIOACTIVE COMPOSITIONS AND METABOLITES

Abstract: Source: US2012100236A Provided are bioactive compounds and metabolites derived from Chromobacterium species culture responsible for controlling pests, compositions containing these compounds, methods for obtaining these compounds and methods of using these compounds and compositions for controlling pests.

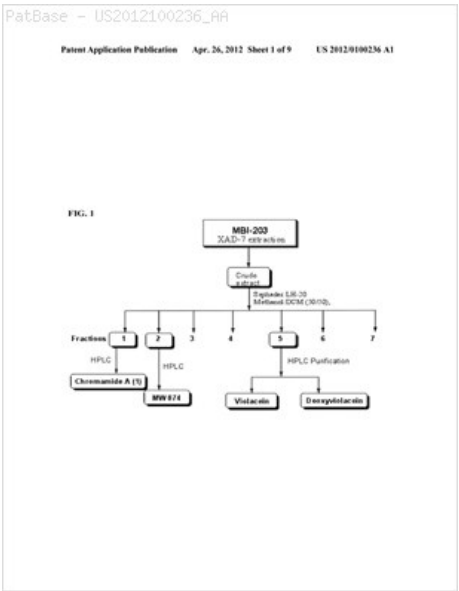
Classifications:

International (IPC 8-9): A01H5/00 A01H5/10 A01N A01N31/08 A01N33/06 A01N35/02 A01N43/16 A01N43/38 A01N43/56 A01N43/76 A01N43/86 A01N43/90 A01N53/02 A01N53/10 A01N61/00 A01N63/00 A01N63/02 A01N65/00 A01N65/12 A01P13/00 A01P17/00 A01P5/00 A01P7/00 A01P7/04 A61K35/00 A61K35/66 A61K35/74 C07C47/20 C07C49/20 C07C49/248 C07D209/54 C07D263/32 C07D263/34 C07D309/14 C07D401/04 C07D403/14 C07D407/06 C07D413/04 C07D413/06 C07D493/10 C07D498/14 C07D513/04 C07G99/00 C07K5/037 C07K5/062 C07K5/08 C07K7/06 C07K7/64 C12N1/20 C12N15/00 C12P1/04 C12P17/06 C12P17/14 C12P17/16 C12P21/04 C12P7/26 C12R1/01 C12R1/20 (Advanced/Invention);
C12R1/01 C12R1/20 (Advanced/Non-invention);
A01N (Subclass/Invention)

CPC: A01N43/76 A01N43/16 A01N43/86 A61K35/74 A61K2236/11 A61K2236/30 C07K5/0205 C12P17/188 C12P21/02 A01N43/90 A61K35/66 A01N43/74 C07D263/32 C07D263/34 C07D309/14 C07D407/06 C07D413/04 C07D413/06 C07D493/10 C07D498/14 C07D513/04 C12P17/06 C12P17/14 C12P17/16 C12R1/01 C07K7/64 A01N35/02 A01N35/04 A01N37/10 A01N37/46 A01N31/08 C12P7/26 C12R1/20 A01N63/02 A01N63/00 C12N1/20 C12P1/04

European: A01N43/90 C07K5/02B C12P17/18E C12P21/02

US: 424/780 424/780P 424/93.4 435/148 435/252.1 435/70.1 435/70.100S 435/71.2 504/100 504/101 504/117 504/225 504/270 504/284 504/292 514/231.5 514/374 514/375 514/4.5 514/452 514/459 514/678 530/321 530/323 530/323S 544/70 548/218 548/235 549/332 549/415



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AR090316 AA	20141105	AR2013P100796	20130312
AU2011323828 AA	20120510	AU20110323828	20111024
AU2011323828 AH	20150305	AU20110323828	20111024
AU2011323828 BB	20150212	AU20110323828	20111024
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CA2815789 AA	20130424	CA20112815789	20111024
CA2866165 AA	20140902	CA20132866165	20130313
CL2013001133 A1	20131122	CL20130001133	20130425
CN103179862 A	20130626	CN201180051656	20111024
CN104508116 A	20150408	CN201380014385	20130313
CO6731075 A2	20130815	CO20130105818	20130425
CR20130184 A	20130529	CR20130000184	20130425
CR20140421 A	20141117	CR20140000421	20140912
ECSP13012590 A	20130731	EC2013SP12590	20130425
EP2632272 A2	20130904	EP20110838488	20111024
EP2847318 A1	20150318	EP20130761233	20130313
IL225810 A0	20130731	IL20130225810	20130417
IN00966MN2013 A	20140926	IN2013MN00966	20130522
JP2013543846 T2	20131209	JP20130536704T	20111024
KR20140014075 A	20140205	KR20137012887	20111024
MA34676 B1	20131102	MA20130035924	20130521
MX2013004683 A1	20130517	MX20130004683	20130425
NZ609123 A	20140829	NZ20110609123	20111024
NZ622566 A	20150227	NZ20110622566	20111024
PE02542014 A1	20140329	PE20130000906	20111024
RU2013123483 A	20141210	RU20130123483	20111024
TW201225844 A	20120701	TW20110138032	20111020
TW201340874 A	20131016	TW20130108703	20130312
TW201444471 A	20141201	TW20140105949	20140221
US2012100236 AA	20120426	US20110280311	20111024
US2014056853 AA	20140227	US20130072691	20131105
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US2014199269 AA	20140717	US20140213896	20140314
US2014303075 AA	20141009	US20140293728	20140602
US2014364312 AA	20141211	US20140336601	20140721
US2015031534 AA	20150129	US20130382624	20130313
US2015079043 AA	20150319	US20140548824	20141120
US2015118192 AA	20150430	US20140581880	20141223
US8715754 BB	20140506	US20110280311	20111024
US8822193 BB	20140902	US20130843971	20130315
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UY34674 A1	20131031	UY20130034674	20130313
UY35466 A1	20141031	UY20140035466	20140314
WO12061082 A2	20120510	WO2011US57541	20111024
WO12061082 A3	20120816	WO2011US57541	20111024
WO13138398 A1	20130919	WO2013US30631	20130313
WO14149241 A1	20140925	WO2014US15799	20140211

Priority:

US20100308287P 20100225	US20100406569P 20101025	US20110280311 20111024
WO2011US57541 20111024	US20110034575 20110224	US20100406541P 20101025
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US20120609937P 20120313	US20120733730P 20121205	US20140213896 20140314

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US20140336601	20140721	US20140548824	20141120	US20140581880	20141223

Probable Assignee: MARRONE BIO INNOVATIONS INC

Assignee(s): (std)**:** ASOLKAR RATNAKAR ; CORDOVA KREYLOS ANA LUCIA ; HUANG HUAZHANG ; KOIVUNEN MARJA ; MARRONE BIO INNOVATIONS INC ; MARRONE PAMELA ; RODRIGUEZ MARGARITA ; XING LIJUAN

Assignee(s): MARRONE BIO INNOVATIONS INC107B - 2121 SECOND STREETDAVISCA95618US ; POINT FINANCIAL INC

Inventor(s): (std)**:** ANA LUCIA CORDOVA KREYLOS ; ASOLKAR RATNAKAR ; CORDOVA KREVLOS ANA LUCIA ; CORDOVA KREYLOS ANA LUCIA ; HIMMEL PHYLLIS ; HUANG HUAZANG ; HUANG HUAZHANG ; HUAZHANG HUANG ; JOHNSON TIMOTHY B ; KOIVUNEN MARJA ; LIJUAN XING ; MARGARITA RODRIGUEZ ; MARJA KOIVUNEN ; MARRONE PAMELA ; MARRONE PAMELA G ; PAMELA MARRONE ; RATNAKAR ASOLKAR ; RODRIGUEZ MARGARITA ; SU HAI ; XIN LIJUAN ; XING LI JUAN ; XING LIJUAN ; HUANG HUA ZHANG

Inventor(s): XING LIJUANUS ; RODRIGUEZ MARGARITAUS ; MARRONE PAMELAUS ; PAMELA G MARRONE ; KOIVUNEN MARJAUS ; CORDOVA KREYLOS ANA LUCIAUS ; ASOLKAR RATNAKARUS

Agent(s): BOECKH TOBIAS; BUCHANAN LUKE NOEL; YUKO; YING HORNG; AGRIS CHERYL H; SONEOKA YUKO

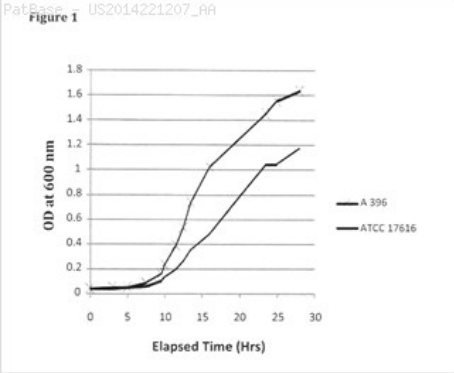
Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IR IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SA SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

3) Family number: 53182824 (US2014221207A)

Title: ISOLATED BACTERIAL STRAIN OF THE GENUS **BURKHOLDERIA** AND PESTICIDAL METABOLITES THEREFROM- FORMULATIONS AND USES

Abstract: Source: US2014221207A A species of **Burkholderia** sp with no known pathogenicity to vertebrates but with pesticidal activity (e.g., plants, algae, arachnids, insects, fungi, weeds and nematodes) as well as methods for controlling algae using said species of **Burkholderia**. Also provided are natural products derived from a culture of said species and methods of controlling algae and/or arachnids using said natural products.

Classifications:
International (IPC 8-9): A01C1/08 A01H5/00 A01N37/40 A01N43/06 A01N43/16 A01N43/26 A01N43/76 A01N43/90 A01N63/02 A01P13/00 A01P21/00 A01P3/00 A01P5/00 A01P7/00 A01P7/02 A01P7/04 A1N43/06 A1N43/26 A1P21/00 C12N1/20 C12N1/38 C12P1/04 C12P13/00 C12P7/62 C12P7/64 C12R1/01 (Advanced/Invention); C12N1/20 C12P1/04 C12P17/00 C12R1/01 (Advanced/Non-invention)
CPC: C12P17/02 C12P17/16 C12P21/00 C12R1/00 C12P7/62 C12P17/14 C12P17/187 C12P17/188 A01N43/90 A01N47/16 A01N63/00 C12R1/01 A01N37/40 A01N43/16 A01N43/76 C12P17/162 C12P7/6436 A01N63/02
US: 424/780 424/93.4 435/134 504/117 514/374 514/4.5 514/4.6 514/456 514/544



Family:

Publication number	Publication date	Application number	Application date
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CA2845732 AA	20140218	CA20122845732	20120814
CL2014000467 A1	20140905	CL20140000467	20140226
CO7020854 A2	20140811	CO20140042252	20140227
CR20140097 A	20140502	CR20140000097	20140227
EP2748304 A2	20140702	EP20120827368	20120814
EP2748304 A4	20150211	EP20120827368	20120814
JP2014527069 T2	20141009	JP20140528424T	20120814
KR20140043823 A	20140410	KR20147004669	20120814
MA35445 B1	20140901	MA20140036839	20140320
MX2014002329 A1	20140822	MX20140002329	20140227
TW201322924 A	20130616	TW20120130761	20120824
US2014221207 AA	20140807	US20120238467	20120814
WO13032693 A2	20130307	WO2012US50807	20120814
WO13032693 A3	20130502	WO2012US50807	20120814

Priority:

US20110528149P 20110827 US20110528153P 20110827 WO2012US50807 20120814 US20120238467 20120814

Probable Assignee: MARRONE BIO INNOVATIONS INC

Assignee(s): (std): ASOLKAR RATNAKAR ; KOIVUNEN MARJA ; MARRONE BIO INNOVATIONS INC ; MARRONE PAMELA

Inventor(s): (std): ASOLKAR RATNAKAR ; KOIVUNEN MARJA ; MARJA KOIVUNEN ; MARRONE PAMELA ; MARRONE PAMELA G ; PAMELA MARRONE ; RATNAKAN ASOLKAR

Inventor(s): RATNAKAR ASOLKAR ; PAMELA G MARRONE

Agent(s): KJERRUMGAARD LARS BO; AGRIS CHERYL H

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PE PG PH PL PT QA RO RS RU RW SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

4) Family number: 54728020 (WO15004458A3)

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Title: METHODS FOR INCREASING MOLECULAR DIVERSITY OF POLYKETIDES AND NON-RIBOSOMAL PROTEINS

Abstract: A method for increasing the molecular diversity of polyketides and non-ribsomomal peptides by using recombination to efficiently increase or decrease the number of modules in the polyketide synthase or non-ribosomal peptide synthetase encoding said polyketide or peptide.

Classifications:
International (IPC 8-9): A01N43/90 A61K31/439 A61P31/00 C07D498/18 C12N15/10 C12P17/18 (Advanced/Invention)
CPC: C07D498/18 A01N43/90 C12P17/188 A01N43/40 C12P17/16

Family:

Publication number	Publication date	Application number	Application date
GB201312318 A0	20130821	GB20130012318	20130709
WO15004455 A2	20150115	WO2014GB52091	20140709
WO15004455 A3	20150312	WO2014GB52091	20140709
WO15004458 A2	20150115	WO2014GB52094	20140709
WO15004458 A3	20150416	WO2014GB52094	20140709

Priority:

GB20130012318 20130709

Probable Assignee: ISOMERASE THERAPEUTICS LTD

Assignee(s): (std)**:** ISOMERASE THERAPEUTICS LTD

Inventor(s): (std)**:** GREGORY MATTHEW ALAN ; KENDREW STEVEN GARY ; MOSS STEVEN JAMES ; WILKINSON BARRIE

Agent(s): TEUTEN ANDREW ET AL

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IR IS IT JP KE KG KM KN KP KR KZ LA LC LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SA SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW