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Clarke, Modet & Cº

COLOMBIA

SEÑORES
DIVISIÓN DE NUEVAS CREACIONES
SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO
E. S. D.

REF: EXPEDIENTE No. 07134713
FECHA DE LA SOLICITUD: DICIEMBRE 20 DE 2007
SOLICITANTE: UNIVERSIDAD DE ANTIOQUIA
TITULO: UN MÉTODO PARA LA PRODUCCIÓN DE BIOMASA A
PARTIR DE TEJIDO DIFERENCIADO DE LA PLANTA

ASUNTO: COMPLEMENTO DE INFORMACIÓN

DILIA RODRIGUEZ D'ALEMAN, identificada como aparece al pie de mi firma, domiciliada en la carrera 11 No. 86-53, piso 6, obrando como apoderada de la sociedad solicitante de la patente de la referencia, me permito presentar los siguientes documentos:

- Copia certificada de la prioridad estadounidense reivindicada N° 11/613,865 de diciembre 20 de 2006 y su traducción

Esta prioridad está siendo presentada dentro del término de 16 meses que exige la Decisión 486 de Diciembre 1 de 2.000.

Ruego a usted continuar con el presente trámite.

Señor Superintendente,

DILIA RODRIGUEZ D'ALEMAN
C.C. 41.654.882 de Bogotá
T.P. 20824
ADM/srr
P. 1050



THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

UNITED STATES DEPARTMENT OF COMMERCE

United States Patent and Trademark Office

April 04, 2008

THIS IS TO CERTIFY THAT ANNEXED HERETO IS A TRUE COPY FROM THE RECORDS OF THE UNITED STATES PATENT AND TRADEMARK OFFICE OF THOSE PAPERS OF THE BELOW IDENTIFIED PATENT APPLICATION THAT MET THE REQUIREMENTS TO BE GRANTED A FILING DATE UNDER 35 USC 111.

APPLICATION NUMBER: 11/613,865

FILING DATE: December 20, 2006

THE COUNTRY CODE AND NUMBER OF YOUR PRIORITY APPLICATION, TO BE USED FOR FILING ABROAD UNDER THE PARIS CONVENTION, IS US11/613,865

**By Authority of the
Under Secretary of Commerce for Intellectual Property
and Director of the United States Patent and Trademark Office**



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E. BORNETT

Certifying Officer

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December 20, 2006

Mail Stop: _____
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Re.: New U.S. Patent Application of:

Atehortua, Lucia; Naranjo Esther Julia;
Herrera, Andrea Lorena; and Gallego Adriana
Maria

Entitled: A METHOD FOR THE PRODUCTION OF BIOMASS FROM
PLANT DIFFERENTIATED TISSUE

Attorney Ref.: 005.002

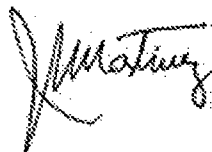
Dear Sir:

Attached hereto is the application identified above including the English Language specification, claims, abstract, one (1) sheet of formal drawings, and executed Declaration and Power of Attorney.

Applicant claims Small Entity Status.

An online Credit Card Payment authorizing payment in the amount of U\$ 425.00 is also transmitted.

Respectfully Submitted,



John J. Martinez
USPTO Reg. No. 48254

Electronic Acknowledgement Receipt

EFS ID:	1390339
Application Number:	11613865
International Application Number:	
Confirmation Number:	8435
Title of Invention:	A METHOD FOR THE PRODUCTION OF BIOMASS FROM PLANT DIFFERENTIATED TISSUE
First Named Inventor/Applicant Name:	LUCIA ATEHORTUA
Customer Number:	63420
Filer:	John J. Martinez
Filer Authorized By:	
Attorney Docket Number:	005.002
Receipt Date:	20-DEC-2006
Filing Date:	
Time Stamp:	18:02:52
Application Type:	Utility

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RAM confirmation Number	1002
Deposit Account	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)	Multi Part /.zip	Pages (if appl.)
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1	Miscellaneous Incoming Letter	Cover_Letter_005_002.pdf	33407	no	1
Warnings:					
Information:					
2		Spec_Claims_Abst_Draw_005_002.pdf	138513	yes	16
	Multipart Description/PDF files in .zip description				
	Document Description		Start	End	
	Specification		1	10	
	Claims		11	14	
	Abstract		15	15	
	Drawings		16	16	
Warnings:					
Information:					
3		Dec_POA_005_002.pdf	210340	yes	4
	Multipart Description/PDF files in .zip description				
	Document Description		Start	End	
	Oath or Declaration filed		1	2	
	Power of Attorney		3	4	
Warnings:					
Information:					
4	Fee Worksheet (PTO-06)	fee-info.pdf	8403	no	2
Warnings:					
Information:					
Total Files Size (in bytes):			390663		

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This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

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**A METHOD FOR THE PRODUCTION OF BIOMASS FROM PLANT
DIFFERENTIATED TISSUE**

FIELD OF THE INVENTION

[0001] The invention is related to a method and a culture medium for the production of food biomass from plant seed differentiated tissue.

BACKGROUND OF THE INVENTION

[0002] The U.S. Patent No. 4,204,366 by Janick, Jules et al. describes a method for the production of cotyledons by non-agricultural means. However, the method described by Janick requires propagating or culturing asexual embryos. Regeneration of plants by somatic embryogenesis has also been described by Sondahl, M.R. et al (U.S. Patent No. 5,312,801)

[0003] The present invention provides a culture medium and a method to produce food biomass by directly culturing seed differentiated and mature tissue without propagating or culturing embryos.

SUMMARY OF THE INVENTION

[0004] The invention of the present application provides a non-agricultural method good for vegetal food production, wherein the method does not require growing cacao plants,

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clonal propagation of plants by embryogenesis, or production of cotyledons by embryogenesis. In addition, the method of the present invention can be scaled up in a laboratory or bioreactor without worrying about weather conditions or contamination by virus or plagues. This new non-agricultural method for vegetal food biomass production is a new answer to the increasing need of food for the world population

[0005] The object of the present invention is to provide a method and a culture medium for the production of biomass by directly culturing seed kernel, or seed cotyledonary differentiated tissue.

[0006] The culture medium of the present invention contains at least DKW culture medium, Vitamin MS culture medium with an enriched concentration of thiamine, sacarose, kinetine, adenine, 2,4diclorofenoxiacético (2,4D), L-Glutamine, cysteine, ascorbic acid, and Gelrite®.

[0007] Specifically, the present invention provides a method and culture media for the production of biomass from seed cotyledonary differentiated tissue or seed kernel from plants from the *Sterculiaceae* and *Proteaceae* families respectively.

[0008] Objectives and additional advantages of the present invention will become more evident in the description of the figures, the detailed description of the invention and the claims.

BRIEF DESCRIPTION OF THE DRAWINGS

[0009] **FIGURE 1** is an illustration of a *Theobroma cacao* (*Sterculiaceae* family) plant seed and a representation of the portion where the sample of cotyledonary differentiated tissue is taken from, to culture for the production of cacao biomass.

DETAILED DESCRIPTION OF THE INVENTION

[00010] The object of the present invention is to provide a culture medium for the production of biomass from plant seed differentiated and mature tissue comprising at least DKW culture medium, Vitamin MS culture medium with an enriched concentration of thiamine, sacarose in a concentration between 15 and 40 g/L, kinetine in a concentration between 0.5 and 4 mg/L, adenine in a concentration between 0.2 and 5 mg/L, 2,4-diclorofenoxiacético (**2,4D**) in a concentration between 1 and 5 mg/L, L-Glutamine in a concentration between 20 and 100 mg/L, cysteine in a concentration between 10 and 100 mg/L, ascorbic acid in a concentration between 20 and 110 mg/L, and Gelrite® in a concentration between 0.7 and 2.0 g/L, wherein the culture medium has the pH adjusted between 5.5 and 6.0.

[00011] In a prefer embodiment, the culture medium of the present invention comprises at least agar, DKW culture medium, Vitamin MS (Murashige and Skoog) culture medium with an enriched concentration of thiamine, sacarose in a concentration of 20 g/L, kinetine in a concentration of 2

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mg/L, adenine in a concentration of 1 mg/L, 2,4-diclorofenoxiacético (2,4D) in a concentration of 4 mg/L, L-Glutamine in a concentration of 50 mg/L, cysteine in a concentration of 20 mg/L, ascorbic acid in a concentration of 20 mg/L, and Gelrite® in a concentration of 1.6 g/L, wherein the culture medium has the pH adjusted to 5.8, and wherein the DKW culture medium and the Vitamin MS culture medium concentrations per liter are prepared according to the suggested standard commercial guidelines.

[00012] **FIGURE 1** is an illustration of the parts of a *Theobroma cacao* seed: seed coat (1); cotyledonary differentiated tissue (2); and embryo (3).

[00013] **FIGURE 1** also shows a representation of one aspect of the present invention where a portion sample of seed differentiated and mature tissue (4) (shaded area) is cotyledonary differentiated tissue (3). In this aspect of the invention the seed differentiated and mature tissue is from a plant from the *Sterculiaceae* family. In a preferred embodiment of this aspect of the present invention, the plant from the *Sterculiaceae* family is from the *Theobroma* genus. Yet, in a more preferred embodiment of this aspect of the present invention the plant from the *Sterculiaceae* plant is from the *T. cacao* species.

[00014] In another aspect of the present invention, the plant seed differentiated and mature tissue is seed kernel, wherein the plant seed differentiated tissue is from a plant from the *Proteaceae* family. In a preferred embodiment of this another aspect of the present invention, the plant from the *Proteaceae* family is from the *Macadamia*

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genus. Yet, in a more preferred embodiment of this another aspect of the present invention, the plant from the *Proteaceae* family is from the *Macadamia* species.

[00015] In addition, the second object of the present invention is to provide a method for the production of biomass from *Sterculiaceae* plant differentiated and mature tissue comprising:

- A. Obtaining a fruit that is between three and five months old;
- B. Cleaning and sterilizing said fruit;
- C. Extracting seeds from said fruit;
- D. Discarding the embryo and obtaining a sample of cotyledonary differentiated tissue;
- E. Putting the sample of cotyledonary differentiated tissue in contact with culture medium;
- F. Incubating under light with a determined wave length, and at a temperature between 15 and 35 °C, until biomass is produced; and,
- G. Collecting grown biomass tissue by retiring said grown biomass tissue from the culture medium.

[00016] Wherein in one aspect of the method of the present invention the culture medium contains at least DKW culture medium, Vitamin MS culture medium with an enriched concentration of thiamine, sacarose in a concentration between 15 and 40 g/L, kinetine in a concentration between 0.5 and 4 mg/L, adenine in a concentration between 0.2 and 5 mg/L, 2,4diclorofenoxiacético (**2,4D**) in a concentration between 1 and 5 mg/L, L-Glutamine in a concentration between 20 and 100 mg/L, cysteine in a concentration

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between 10 and 100 mg/L, ascorbic acid in a concentration between 20 and 110 mg/L, and Gelrite® in a concentration between 0.7 and 2.0 g/L; and wherein the pH of said culture medium is adjusted to a range between 5.5 and 6.0.

However, in a preferred embodiment of this aspect of the method of the present invention, the culture medium contains at least agar, DKW culture medium, Vitamin MS (Murashige and Skoog) culture medium with an enriched concentration of thiamine, sacarose in a concentration of 20 g/L, kinetine in a concentration of 2 mg/L, adenine in a concentration of 1 mg/L, 2,4diclorofenoxiacético (**2,4D**) in a concentration of 4 mg/L, L-Glutamine in a concentration of 50 mg/L, cysteine in a concentration of 20 mg/L, ascorbic acid in a concentration of 20 mg/L, and Gelrite® in a concentration of 1.6 g/L; and the pH of the culture medium is adjusted to 5.8.

[00017] In one more aspect of the method of the present invention, the cotyledonary differentiated and mature tissue is from a *Sterculiaceae* plant from the *Theobroma* genus. Still, in a preferred embodiment of this aspect of the present invention the *Sterculiaceae* plant is from the *T. cacao* species.

[00018] In a preferred embodiment of another additional aspect of the method of the present invention the sample of cotyledonary differentiated and mature tissue in contact with the culture medium is incubated under total darkness.

[00019] Moreover, the third object of the present invention is to provide a method for the production of

biomass from *Proteaceae* plant differentiated and mature tissue comprising:

- a. Obtaining a sample of kernel differentiated tissue;
- b. Putting the sample of kernel differentiated tissue in contact with culture medium;
- c. Incubating under light with a determined wave length, and at a temperature between 15 and 35 °C, until biomass is produced; and,
- d. Collecting grown biomass by retiring said grown biomass from the culture medium.

[00020] Wherein in one aspect of the method for the production of biomass from *Proteaceae* plant differentiated and mature tissue, the culture medium contains at least DKW culture medium, Vitamin MS culture medium with an enriched concentration of thiamine, sacarose in a concentration between 15 and 40 g/L, kinetine in a concentration between 0.5 and 4 mg/L, adenine in a concentration between 0.2 and 5 mg/L, 2,4diclorofenoxiacético (**2,4D**) in a concentration between 1 and 5 mg/L, L-Glutamine in a concentration between 20 and 100 mg/L, cysteine in a concentration between 10 and 100 mg/L, ascorbic acid in a concentration between 20 and 110 mg/L, and Gelrite® in a concentration between 0.7 and 2.0 g/L; and wherein the pH of said culture medium is adjusted to a range between 5.5 and 6.0.

However, in a preferred embodiment of this aspect of the method of the present invention, the culture medium contains at least agar, DKW culture medium, Vitamin MS (Murashige and Skoog) culture medium with an enriched concentration of thiamine, sacarose in a concentration of 20 g/L, kinetine in a concentration of 2 mg/L, adenine in a

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concentration of 1 mg/L, 2,4diclorofenoxiacético (2,4D) in a concentration of 4 mg/L, L-Glutamine in a concentration of 50 mg/L, cysteine in a concentration of 20 mg/L, ascorbic acid in a concentration of 20 mg/L, and Gelrite® in a concentration of 1.6 g/L; and the pH of the culture medium is adjusted to 5.8.

[00021] In one more aspect of the method for the production of biomass from *Proteaceae* plant differentiated and mature tissue, the seed kernel differentiated tissue is from a *Proteaceae* plant from the *Macadamia* genus. Still in a preferred embodiment of this aspect of this method, the *Proteaceae* plant is from the *Macadamia* species.

[00022] In a preferred embodiment of another additional aspect of the method for the production of biomass from *Proteaceae* plant differentiated and mature tissue, the sample of kernel differentiated tissue in contact with the culture medium is incubated under total darkness.

[00023] The method and culture of the present invention could also be applied for the production of biomass from seed differentiated tissue from other nut plants, as for example; almonds, walnuts, cashew nuts, Brazil nuts, hazelnuts, chestnuts, chickpeas, pistachios, pecan nuts, pine nuts, peanuts, heart nuts, persina walnuts, etc.

[00024] While the description presents the preferred embodiments of the present invention, additional changes can be made in the form and disposition of the parts without distancing from the basic ideas and principles comprised in the claims.

EXAMPLE

MATERIALS AND METHODS

[00025] The culture medium for production of biomass was prepared as follows:

[00026] Agar, DKW culture medium, Vitamin MS (Murashige and Skoog) culture medium with an enriched concentration of thiamine, sacarose 20 g/L, kinetine 2 mg/L, adenine 1 mg/L, 2,4diclorofenoxiacético (2,4D) 4 mg/L, L-Glutamine 50 mg/L, cysteine 20 mg/L, ascorbic acid 20 mg/L, and Gelrite® 1.6 g/L. The culture medium has the pH adjusted to 5.8, and the DKW culture medium and the Vitamin MS culture medium concentrations were prepared according to the suggested standard commercial guidelines.

[00027] Three to four month old cacao fruits were obtained from a Colombian farm. The cacao fruits were cleaned and sterilized. The seed from said fruits were extracted. The embryos from the cacao seed were discarded. Samples of approximately 5 mm from the cotyledonary differentiated tissue were cut from the seed. The cotyledonary differentiated tissue samples were put in Petri plates with the culture medium. The culture plates with the cotyledonary differentiated tissue samples were incubated under darkness at room temperature for 1-3 months. The new grown dark brown biomass tissue buds were collected by separating it from the solid culture medium. The dark brown tissue buds were split into several pieces and each was re-inoculated into a new Petri plate with the

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culture medium. After approximately one month, the new dark brown tissue buds were collected again.

[00028] The collected dark brown tissue buds have a cacao flavor when orally tasted. In addition, preliminary analysis of the dark brown tissue buds shows that they contain at least cacao butter and cacao carbohydrates.

[00029] Fresh mature macadamia fruits were obtained in a local market. The macadamia fruits were cleaned and sterilized. Inside a flow chamber, samples of approximately 5 mm from the kernel differentiated and mature tissue of the fruit were cut. The kernel differentiated and mature tissue samples were put in Petri plates with the culture medium. The culture plates with the kernel differentiated and mature tissue samples were incubated under darkness at room temperature for 1-3 months. The new grown whitish creamy biomass tissue buds were collected by separating it from the solid culture medium. The whitish creamy biomass tissue buds were split into several pieces and each piece was re-inoculated into a new Petri plate with culture medium. After approximately one month, the new whitish creamy biomass tissue buds were collected again.

[00030] The collected whitish creamy biomass tissue buds from macadamia beans was macroscopically analyzed with a light microscope, in which, fatty tissue was observed. This initial observation suggests that said biomass contains at least macadamia fat components. In addition, the whitish creamy biomass tissue buds have macadamia flavor when orally tested.

CLAIMS

1. A culture medium for the production of biomass from plant seed differentiated tissue comprising at least DKW culture medium, Vitamin MS culture medium with an enriched concentration of thiamine, sacarose in a concentration between 15 and 40 g/L, kinetine in a concentration between 0.5 and 4 mg/L, adenine in a concentration between 0.2 and 5 mg/L, 2,4diclorofenoxiacético (**2,4D**) in a concentration between 1 and 5 mg/L, L-Glutamine in a concentration between 20 and 100 mg/L, cysteine in a concentration between 10 and 100 mg/L, ascorbic acid in a concentration between 20 and 110 mg/L, and Gelrite® in a concentration between 0.7 and 2.0 g/L, wherein the culture medium has the pH adjusted between 5.5 and 6.0.
2. The culture medium of claim 1, wherein the plant seed differentiated tissue is cotyledonary differentiated tissue, and wherein the plant seed differentiated tissue is from a plant from the *Sterculiaceae* family.
3. The culture medium of claim 2, wherein the plant from the *Sterculiaceae* family is from the *Theobroma* genus.
4. The culture medium of claim 2, wherein the plant from the *Sterculiaceae* plant is from the *T. cacao* species.
5. The culture medium of claim 1, wherein the plant seed differentiated tissue is seed kernel, and wherein the plant seed differentiated tissue is from a plant from the *Proteaceae* family.

6. The culture medium of claim 5, wherein the plant from the *Proteaceae* family is from the *Macadamia* genus.

7. The culture medium of claim 5, wherein the plant from the *Proteaceae* family is from the *Macadamia* species.

8. A method for the production of biomass from *Sterculiaceae* plant differentiated tissue comprising:

- A. Obtaining a fruit that is between three and five months old;
- B. Cleaning and sterilizing said fruit;
- C. Extracting seeds from said fruit;
- D. Discarding the embryo and obtaining a sample of cotyledonary differentiated tissue;
- E. Putting the sample of cotyledonary differentiated tissue in contact with culture medium;
- F. Incubating under light with a determined wave length, and at a temperature between 15 and 35 °C, until biomass is produced; and,
- G. Collecting grown biomass by retiring said grown biomass from the culture medium.

9. The method of claim 8, wherein the culture medium contains at least DKW culture medium, Vitamin MS culture medium with an enriched concentration of thiamine, sacarose in a concentration between 15 and 40 g/L, kinetine in a concentration between 0.5 and 4 mg/L, adenine in a concentration between 0.2 and 5 mg/L, 2,4-diclorofenoxiacético (**2,4D**) in a concentration between 1 and 5 mg/L, L-Glutamine in a concentration between 20 and 100 mg/L, cysteine in a concentration between 10 and 100

mg/L, ascorbic acid in a concentration between 20 and 110 mg/L, and Gelrite® in a concentration between 0.7 and 2.0 g/L; and wherein the pH of the culture medium is adjusted to a range between 5.5 and 6.0.

10. The method of claim 8, wherein the *Sterculiaceae* plant is from the *Theobroma* genus.

11. The method of claim 8, wherein the *Sterculiaceae* plant is from the *T. cacao* species.

12. The method of claim 8, wherein the sample of cotyledonary differentiated tissue in contact with the culture medium is incubated under total darkness.

13. A method for the production of biomass from *Proteaceae* plant differentiated tissue comprising:

- a. Obtaining a sample of kernel differentiated tissue;
- b. Putting the sample of kernel differentiated tissue in contact with culture medium;
- c. Incubating under light with a determined wave length, and at a temperature between 15 and 35 °C, until biomass is produced; and,
- d. Collecting grown biomass by retiring said grown biomass from the culture medium.

14. The method of claim 13, wherein the culture medium contains at least DKW culture medium, Vitamin MS culture medium with an enriched concentration of thiamine, saccharose in a concentration between 15 and 40 g/L, kinetine in a concentration between 0.5 and 4 mg/L, adenine in a

concentration between 0.2 and 5 mg/L, 2,4-diclorofenoxiacético (**2,4D**) in a concentration between 1 and 5 mg/L, L-Glutamine in a concentration between 20 and 100 mg/L, cysteine in a concentration between 10 and 100 mg/L, ascorbic acid in a concentration between 20 and 110 mg/L, and Gelrite® in a concentration between 0.7 and 2.0 g/L; and wherein the pH of the culture medium is adjusted to a range between 5.5 and 6.0.

15. The method of claim 13, wherein the *Proteaceae* plant is from the *Macadamia* genus.

16. The method of claim 13, wherein the *Proteaceae* plant is from the *Macadamia* species.

17. The method of claim 13, wherein the sample of kernel differentiated tissue in contact with the culture medium is incubated under total darkness.

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**A METHOD FOR THE PRODUCTION OF BIOMASS FROM PLANT
DIFFERENTIATED TISSUE**

ABSTRACT

The present invention provides a method and a culture medium for the production of food biomass by directly culturing seed kernel tissue, or seed cotyledonary differentiated tissue. The culture medium of the present invention contains at least DKW culture medium, Vitamin MS culture medium with an enriched concentration of thiamine, sacarose, kinetine, adenine, 2,4diclorofenoxiacético (2,4D), L-Glutamine, cysteine, ascorbic acid, and Gelrite®.

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Declaration and Power of Attorney for Patent Application

Declaración y poder para solicitud de patente

Spanish Language Declaration

Como inventor abajo nombrado, por este medio declaro que:

Mi residencia, dirección postal y ciudadanía son los que indican a continuación, al lado de mi nombre.

Considero que soy el primer, original y único inventor (si hay un solo nombre indicado a continuación) o el primer, original y único inventor conjunto (en caso de múltiples nombres a continuación) de la materia objeto de la reivindicación y para la cual se solicita una patente sobre el invento titulado

"A METHOD FOR THE PRODUCTION OF BIOMASS

FROM PLANT DIFFERENTIATED TISSUE"

cuya descripción se anexa a la presente, salvo que se marque la siguiente casilla:

☐ fue presentada el _____
bajo el número de solicitud de Estados Unidos o
número de solicitud internacional PCT
_____ y modificada el día
_____ (de ser procedente).

Por este medio declaro que ha revisado y que entiendo el contenido de la descripción que antecede, incluso las reivindicaciones, según estén modificadas de acuerdo con cualquier modificación arriba citada.

Por este medio reconozco mi deber de divulgar información que sea esencial con respecto a la patentabilidad según se define en el Título 37 del Código de Regulaciones Federales § 1.56.

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated next to my name.

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled

the specification of which is attached hereto unless the following box is checked:

☐ was filed on _____
as United States Application Number or PCT
International Application Number
_____ and was amended on
_____ (if applicable).

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations, § 1.56.

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Spanish Language Declaration

Por este medio reclamo prioridad extranjera bajo el Título 35, Código de Estados Unidos, § 119(a)-(d) o § 365(b) de cualquier o cualesquier solicitud(es) de patente o certificado de inventor extranjera(s), o bajo el Título 35, § 365(a) del mismo Código, de cualquier solicitud internacional PCT en que se designa por lo menos un país distinto a los Estados Unidos, dicha(s) solicitud(es) o dicho(s) certificado(s) enumerándose a continuación, y, marcando la(s) siguiente(s) casilla(s), también he identificado cualquier solicitud de patente o de certificado de inventor extranjera que tenga una fecha de presentación anterior a la fecha de la solicitud sobre la cual se reclama prioridad

Prior Foreign Application(s)
Solicitud(es) Extranjera(s) Anterior(es)

(Number) (Número)	(Country) (País)
(Number) (Número)	(Country) (País)

Por este medio reclamo el beneficio bajo el Título 35, Código de Estados Unidos, § 119(e) de cualquier o cualesquier solicitud(es) provisional(es) de Estados Unidos enumerada(s) a continuación.

(Application No.) (Nº de solicitud)	(Filing Date) (Fecha de presentación)
(Application No.) (Nº de solicitud)	(Filing Date) (Fecha de presentación)

Por este medio reclamo el beneficio bajo el Título 35, Código de Estados Unidos, § 120 de cualquier o cualesquier solicitud(es) de Estados Unidos o, bajo el Título 35, § 365(c) del mismo Código, de cualquier solicitud internacional PCT en que se designan los Estados Unidos, dicha(s) solicitud(es) enumerándose a continuación y, en la medida en que el objeto de cada una de las reivindicaciones de la presente solicitud no hubiere sido divulgado en la solicitud anterior de Estados Unidos o internacional PCT, según lo dispuesto en el primer párrafo del Título 35, Código de Estados Unidos, § 112, reconozco el deber de divulgar información que fuere esencial con respecto a la patentabilidad, según se define en el Título 37, Código de Regulaciones Federales, § 1.56, que hubiere llegado a estar disponible entre la fecha de presentación de la solicitud anterior y la fecha de presentación nacional o internacional PCT de la presente solicitud.

(Application No.) (Nº de solicitud)	(Filing Date) (Fecha de presentación)
(Application No.) (Nº de solicitud)	(Filing Date) (Fecha de presentación)

Por este medio manifiesto que todas las declaraciones hechas en la presente en base a mis propios conocimientos son verdaderas y que considero que son verdaderas todas las declaraciones hechas en base al mejor saber y entender; adicionalmente manifiesto que dichas declaraciones se hicieron con conocimiento de que las declaraciones falsas intencionales y similares son punibles por multa o encarcelamiento o ambos, bajo la Sección 1001 del Título 18 del Código de Estados Unidos y que dichas declaraciones falsas intencionales pueden poner en peligro la validez de la solicitud o de cualquier patente concedida en virtud de la misma.

I hereby claim foreign priority under Title 35, United States Code, § 119(a)-(d) or § 365(b) of any foreign application(s) for patent or inventor's certificate, or § 365(a) of any PCT International application which designated at least one country other than the United States, listed below and have also identified below, by checking the box, any foreign application for patent or inventor's certificate or PCT International application having a filing date before that of the application on which priority is claimed.

Priority Not Claimed
Derecho de prioridad no reivindicado

☐
(Day/Month/Year Filed)
(Día/Mes/Año de presentación)

☐
(Day/Month/Year Filed)
(Día/Mes/Año de presentación)

I hereby claim the benefit under Title 35, United States Code, § 119(e) of any United States provisional application(s) listed below.

I hereby claim the benefit under Title 35, United States Code, § 120 of any United States application(s), or § 365(c) of any PCT International application designating the United States, listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States or PCT International application in the manner provided by the first paragraph of Title 35, United States Code, § 112, I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations, § 1.56 which became available between the filing date of the prior application and the national or PCT International filing date of this application.

(Status) (patented, pending, abandoned)
(Estado) (patentado, en trámite, abandonado)

(Status) (patented, pending, abandoned)
(Estado) (patentado, en trámite, abandonado)

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

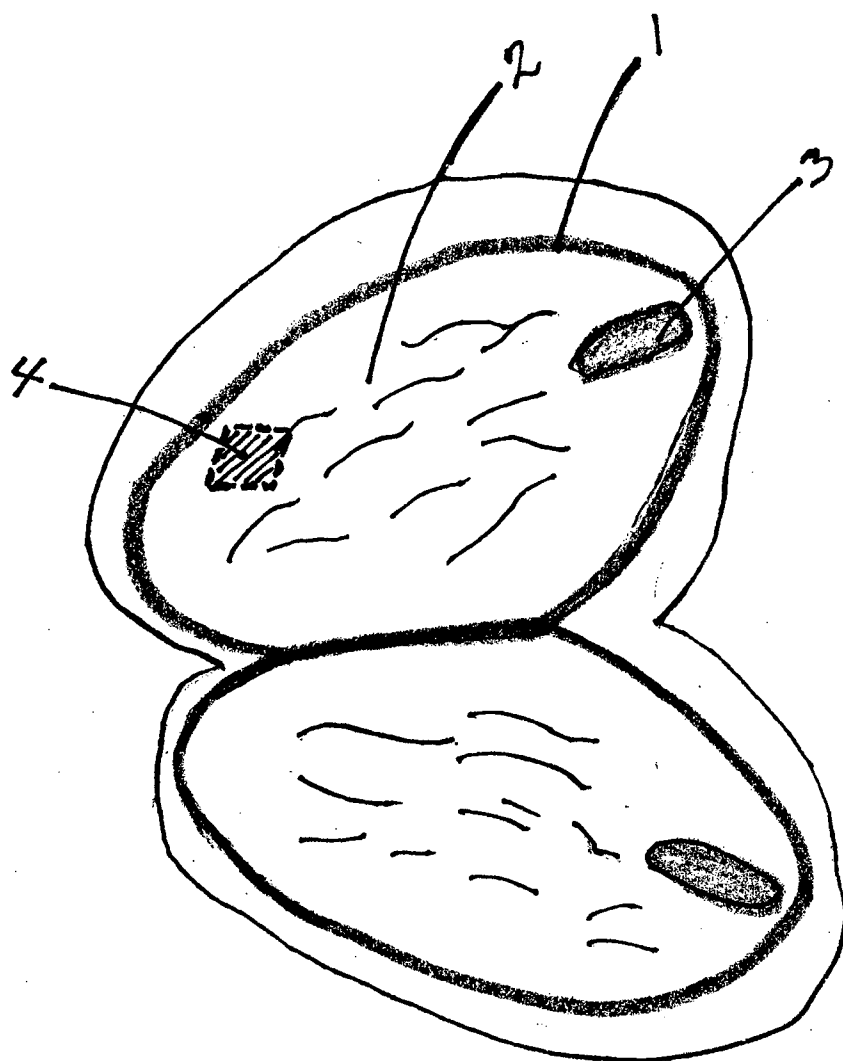


FIG. 1

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ESTADOS UNIDOS DE AMÉRICA
A TODOS AQUELLOS A QUIENES EL PRESENTE LLEGUE:

DEPARTAMENTO DE COMERCIO DE LOS ESTADOS UNIDOS
Oficina de Patentes y Marcas de los Estados Unidos

4 de abril de 2008

La presente es para certificar que el anexo es una copia fiel de los registros de la Oficina de Patentes y Marcas de los Estados Unidos, de los documentos de la solicitud de patente identificada más adelante, que cumplieron con los requerimientos para concederse una fecha de presentación de acuerdo con 35 USC 111.

Número de Solicitud: 11/613,865

Fecha de Presentación: 20 de diciembre de 2006

EL CÓDIGO DEL PAÍS Y EL NÚMERO DE SU SOLICITUD DE PRIORIDAD, PARA SER USADA EN LA PRESENTACIÓN EXTRANJERA BAJO EL CONVENIO DE PARÍS ES US11/613,865

Por la autoridad de
Bajo el Secretario de Comercio para la Propiedad Intelectual y el Director de la Oficina de Patentes y Marcas de los Estados Unidos de América

(fdo) E. BORNETT
Oficial Certificador
Sello oficial de la Oficina de Patentes y Marcas de los Estados Unidos de América

AFIRMACIONES

1. Un medio de cultivo para la producción de biomasa a partir del tejido diferenciado de la semilla de la planta incluye al menos medio de cultivo DKW, medio de cultivo Vitamina MS con una concentración enriquecida de tiamina, sacarosa en una concentración entre 15 y 40 g/L, kinetina en una concentración entre 0.5 y 4 mg/L, adenina en una concentración entre 0.2 y 5 mg/L, 2,4diclorofenoxiacético (2,4D) en una concentración entre 1 y 5 mg/L, L-Glutamina en una concentración entre 20 y 100 mg/L, cisteína en una concentración entre 10 y 100 mg/L, ácido ascórbico en una concentración entre 20 y 110 mg/L, y Gelrite® en una concentración entre 0.7 y 2.0 g/L, donde el medio de cultivo tiene el pH ajustado entre 5.5 y 6.0.

2. El medio de cultivo de la afirmación 1, donde el tejido diferenciado de la semilla de la planta es tejido diferenciado de cotidélón, y donde el tejido diferenciado de la semilla de la planta es de una planta de la familia *Sterculiaceae*.

3. El medio de cultivo de la afirmación 2, donde la planta de la familia *Sterculiaceae* es del género *Theobroma*.

4. El medio de cultivo de la afirmación 2, donde la planta de la familia *Sterculiaceae* es de la especie *T. cacao*.
5. El medio de cultivo de la afirmación 1, donde el tejido diferenciado de la semilla de la planta es una semilla de almendra, y donde el tejido diferenciado de la semilla de la planta es de una planta de la familia *Proteaceae*.
6. El medio de cultivo de la afirmación 5, donde la planta de la familia *Proteaceae* es del genero *Macadamia*.
7. El medio de cultivo de la afirmación 5, donde la planta de la familia *Proteaceae* es de la especie *Macadamia*.
8. Un método para la producción de biomasa a partir del tejido diferenciado de la planta *Sterculiaceae* comprende:
 - A. Obtener una fruta que esté entre tres y cinco meses de maduración
 - B. Limpiar y esterilizar dicha fruta
 - C. Extraer semillas de dicha fruta
 - D. Descartar el embrión y obtener una muestra de tejido diferenciado de cotidélón
 - E. Poner la muestra de tejido diferenciado de

cotidélón en contacto con el medio de cultivo

F. Incubar bajo la luz con una longitud de onda determinada, y a una temperatura entre 15 y 35°C, hasta que se produzca biomasa y,

G. Recoger la biomasa cultivada retirando esta biomasa cultivada del medio de cultivo.

9. El método de la afirmación 8, donde el medio de cultivo contiene al menos medio de cultivo DKW, medio de cultivo Vitamina MS con una concentración enriquecida de tiamina, sacarosa en una concentración entre 15 y 40 g/L, kinetina en una concentración entre 0.5 y 4 mg/L, adenina en una concentración entre 0.2 y 5 mg/L, 2,4 diclorofenoxiacético (**2,4D**) en una concentración entre 1 y 5 mg/L, L-Glutamina en una concentración entre 20 y 100 mg/L, cisteína en una concentración entre 10 y 100 mg/L, ácido ascórbico en una concentración entre 20 y 110 mg/L, y Gelrite® en una concentración entre 0.7 y 2.0 g/L; y donde el pH del medio de cultivo es ajustado a un rango entre 5.5 y 6.0.

10. El método de la afirmación 8, donde la planta *Sterculiaceae* es del género *Theobroma*.

11. El método de la afirmación 8, donde la planta *Sterculiaceae* es de la especie *T. cacao*.

12. El método de la afirmación 8, donde la muestra de tejido diferenciado de cotidélón en contacto con el medio de cultivo es incubado bajo total oscuridad.

13. Un método para la producción de biomasa a partir del tejido diferenciado de la planta *Proteaceae* incluye:

- a. Obtener una muestra de tejido diferenciado de almendra;
- b. Poner el tejido diferenciado de la muestra de almendra en contacto con el medio de cultivo;
- c. Incubar bajo la luz con una longitud de onda determinada, y a una temperatura entre los 15 Y 35 °c, hasta que se produzca la biomasa; y,
- d. Recoger la biomasa cultivada retirando dicha biomasa cultivada del medio de cultivo.

14. El método de la afirmación 13, donde el medio de cultivo contiene al menos medio de cultivo DKW, medio de cultivo Vitamina MS con una concentración enriquecida de tiamina, sacarosa en una concentración entre 15 y 40 g/L, kinetina en una concentración entre 0.5 y 4 mg/L, adenina en una

concentración entre 0.2 y 5 mg/L, 2,4diclorofenoxiacético (2,4D) en una concentración entre 1 y 5 mg/L, L-Glutamina en una concentración entre 20 y 100 mg/L, cisteína en una concentración entre 10 y 100 mg/L, ácido ascórbico en una concentración entre 20 y 110 mg/L, y Gelrite® en una concentración entre 0.7 y 2.0 g/L; y donde el pH del medio de cultivo es ajustado a un rango entre 5.5 y 6.0.

15. El método de la afirmación 13, donde la planta *Proteaceae* es del género *Macadamia*.

16. El método de la afirmación 13, donde la planta *Proteaceae* es de la especie *Macadamia*.

17. El método de la afirmación 13, donde la muestra de tejido diferenciado de almendra en contacto con el medio de cultivo es incubada bajo total oscuridad.

REPUBLICA DE COLOMBIA
SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO

Folio 59

2020
Bogotá D.C.,

Doctor(a)
RODRIGUEZ D ALEMAN DILIA MARIA
Apoderado(a) y/o Representante de
UNIVERSIDAD DE ANTIOQUIA.

REFERENCIA	Radicación No. 07 134713
	Trámite 2
	Evento 1
	Actuación 416
	Oficio No. 6329
	Folios 1

Teniendo en cuenta que la solicitud de privilegio de patente que se tramita bajo el expediente indicado en la referencia, reúne los requisitos de forma establecidos en los artículos 26 y 27 de la Decisión 486 de la Comisión de la Comunidad Andina, y en las demás disposiciones vigentes sobre la materia, se envía el extracto de la solicitud a la Oficina de Comunicaciones para efecto de su publicación en la Gaceta de Propiedad Industrial, conforme lo establece el artículo 40 de la misma Decisión.

Siendo manifestación expresa del interesado, la solicitud no será publicada antes de los seis (6) meses contados a partir de la fecha de presentación, por lo tanto la publicación en este caso no se hará antes del día 20 del mes de junio de 2008.

Cúmplase
Dado en Bogotá DC,

03 JUL 2008

ALIX CARMENZA CESPEDES DE VERGEL
Jefe de la división de Nuevas Creaciones

jfernand