



No. 09-126834-00001-0000

Fecha: 2011-07-26 10:46:31 Dep. 2020 DIR.NUEVASC
Tra. 2 PATENTES Eve: 1 REGDEPOSITO
Act. 400 OPOSIOBSERVTER Folios: 57**FORMULARIO ÚNICO DE OPOSICIÓN**

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OPOSICIÓN A SOLICITUD DE:

- | | |
|--|--|
| ☒ Patente de Invención | ☐ Marca Colectiva |
| ☐ Patente de Modelo de Utilidad | ☐ Marca de Certificación |
| ☐ Diseño Industrial | ☐ Lema Comercial |
| ☐ Esquema de Trazado para Circuitos | ☐ Marcas de Productos o Servicios |
| | ☐ Denominación de Origen |

2

SOLICITUD PUBLICADA

Número del expediente: 09- 126.834
Solicitante: ACEITES Y GRASAS VEGETALES S.A. – ACEGRASAS S.A.
Apoderado: Álvaro Correa Ordóñez
Título de la nueva creación o denominación del signo: SUSTITUTO MANTEQUILLA INDUSTRIAL PICADA PARA PANADERÍA
Gaceta: 628 del 20 de mayo de 2011

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OPOSICIÓN PRESENTADA POR:**OPOSITOR**

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IDENTIFICACIÓN

- | | |
|-------------------------------|---|
| ☐ C.C. | ☒ NIT |
| ☐ C.E. | ☐ Otro |

Cúal: _____
Número: 860006127-4

REPRESENTANTE O APODERADO

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IDENTIFICACIÓN

- | | |
|--|-------------------------------|
| ☒ C.C. | ☐ NIT |
| ☐ C.E. | ☐ Otro |

Cúal: _____
Número: 79.980.922 TP: 131.853

En caso de haber presentado poder general para asuntos que se adelanten ante la Delegatura de Propiedad Industrial, sírvase indicar el numero de radicación (del poder). _____

4

FUNDAMENTOS DE LA OPOSICIÓN

Causal: Artículos 14, 16, 18 y 42 de la Decisión 486 de la Comunidad Andina
Signo fundamento de la oposición: _____

Expediente y/o registro de la marca opositora (De ser marca el signo fundamento de la oposición): _____

Justificación: Ver "Fundamentos de la Oposición"

5

PRÓRROGA

- | | |
|-----------------------------|--|
| ☐ SI | ☒ NO |
|-----------------------------|--|

Comprobante de pago No. _____ Fecha: _____

6

INVOCACIÓN DE NOTORIEDAD

- | | |
|-----------------------------|--|
| ☐ SI | ☒ NO |
|-----------------------------|--|

Comprobante de pago No. _____ Fecha: _____

7

TARIFA DE LA OPOSICIÓN

Comprobante de pago No. _____ Fecha: _____

8 ANEXOS

- ☒ Comprobante de pago de la tasa.
- ☒ Poderes, si fuera el caso.
- ☒ Pruebas de los fundamentos de la
- ☐ Documentos que acrediten el legítimo interés, si fuere el
- ☒ Documento que acredita la existencia y representación legal de la persona jurídica en cuanto no estén inscritas en alguna Cámara de Comercio del País.
- ☒ Copias para traslado.
- ☐ Tasa de próroga.
- ☐ Tasa de invocación de
- ☒ Tasa de la oposición.

9 Nombre y firma

Nombre: SANTIAGO MÁRQUEZ ROBLEDO

Firma

C.C. 79.980.922

T.P. 131.853

FUNDAMENTOS DE LA OPOSICIÓN

La solicitud de registro de patente de invención denominada **"SUSTITUTO DE MANTEQUILLA INDUSTRIAL PICADA PARA PANADERÍA"**, con expediente No. 09-126.834, a cuyo registro me opongo y al cual presento oposición, fue solicitado el 9 de noviembre de 2009 y fue publicado en la Gaceta de la Propiedad Industrial No. 628 del 20 de mayo de 2011, bajo el número 44.

SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO

SOLICITUDES DE PATENTES DE INVENCION				GACETA No. 628 Página. 582	
(10) CO		(11) N° de publicación: 44 (21) N° de solicitud: 09 126.834 (51) Int Cl: A23C 15/00			
(12) Solicitud de patente de invención sin examen previo					
(22) Fecha de solicitud: 09/11/2009			(71) Solicitante(s) ACEITES Y GRASAS VEGETALES S.A. - ACEGRASAS S.A.		
(30) Prioridad (31) (32) (33)			(72) Inventor(es) VEINTEMILLA GRANADOS NELSON COLMENARES ARAQUE JOSÉ DANIEL		
(43) Fecha de publicación: 20/05/2011			(74) Agente: ALVARO CORREA ORDOÑEZ		
(54) Título: SUSTITUTO DE MANTEQUILLA INDUSTRIAL PICADA PARA PANADERÍA.					

(57) Resumen:

La presente invención proporciona un sustituto de mantequilla industrial picada que presenta un producto final alimenticio con aroma y sabor a lácteo (mantequilla). El sustituto de margarina picada de la presente invención se conforma por una mezcla de grasas vegetales, agua, sal, emulsificantes, saborizantes artificiales idénticos a los naturales, acidulantes, colorantes naturales, y conservantes.

1. Interés para Actuar.

Conforme a lo dispuesto en el **Artículo 42 de la Decisión 486**, el cual establece que: *"Dentro del plazo de sesenta días siguientes a la fecha de la publicación, quien tenga legítimo interés, podrá presentar por una sola vez, oposición fundamentada que pueda desvirtuar la patentabilidad de la invención."*, y estando dentro del término estipulado por la ley, manifiesto el legítimo interés de mi representada en presentar oposición, argumentando que la pretendida solicitud Colombiana No. 09-126.834 no cumple con los requisitos exigidos por

la ley, como se analizará más adelante, y de ser concedida atentaría directamente la comercialización que mi representada realiza de productos alimenticios del tipo sustituto de mantequilla, que se encuentran en el estado de la técnica como se demostrará más adelante. Por lo tanto, solicito respetuosamente a ese Despacho, se sirva tener en cuenta los argumentos técnicos incluidos en el presente escrito oposición dentro del trámite administrativo que se surte en esta Superintendencia.

2. Fundamentos de Hecho.

- 2.1. El 09 de noviembre de 2009 se presentó, ante la División de Nuevas Creaciones de la Superintendencia de Industria y Comercio, la solicitud de Patente de Invención titulada: **"SUSTITUTO DE MANTEQUILLA INDUSTRIAL PICADA PARA PANADERÍA"**, a nombre de la sociedad **ACEITES Y GRASAS VEGETALES S.A. - ACEGRASAS S.A.**, organizada y existente de conformidad con las leyes de Colombia.
- 2.2. El objeto de dicha solicitud de patente, de acuerdo con las reivindicaciones de la misma, es el de proporcionar un sustituto de mantequilla industrial picada que presenta un producto final alimenticio con aroma y sabor a lácteo (mantequilla). El sustituto de margarina picada de la invención se conforma por una mezcla de grasas vegetales, agua, sal, emulsificantes, saborizantes artificiales idénticos a los naturales, acidulantes, colorantes naturales, y conservantes.
- 2.3. Ahora bien, respetuosamente me permito manifestar a este Despacho que la invención reclamada en la solicitud No. CO 09-126.834 objeto de la presente oposición, no cumple con los requisitos exigidos en el Artículo 14 de la Decisión 486 del Acuerdo de Cartagena, que se encuentra plenamente vigente, en el cual se establece lo siguiente:

ARTÍCULO 14 DE LA DECISIÓN 486: *"Los países miembros otorgarán patentes para las invenciones sean de productos o de procedimientos en todos los campos de la tecnología, siempre que sean nuevas, tengan nivel inventivo y sean susceptibles de aplicación industrial".*

En efecto, de acuerdo con el citado artículo 14, es claro que los países miembros de la Comunidad Andina de Naciones (CAN), que se rigen por la Decisión 486, podrán otorgar el privilegio de patente dentro de su territorio a una invención, siempre y cuando dicha invención tenga novedad, nivel inventivo y aplicación industrial.

En el presente caso, la invención en cuestión No. CO 09-126.834, carece de la novedad y la altura inventiva requeridas para poder gozar del privilegio de patente solicitado en el territorio Colombiano, frente a las enseñanzas de los siguientes documentos, que constituyen el estado del arte más cercano, anterior a la fecha de presentación de la solicitud objeto de la presente oposición.

No.	Documento	Título	Fecha
D1	US 2,527,785	Butter Flavoring Composition	Agosto-21-1948
D2	US 4,906,490	Method of Producing Butter Flavored Granules	Marzo-06-1990
D3	WO/1987/007477	Margarine With fermentation Taste	Diciembre-17-1987
D4	US 4,414,229	Margarine and the like spread with Natural Butter Flavor	Noviembre-08-1983

D5	US 4,447,463	Process for Producing a Butter/Margarine Blend Product	Mayo-08-1984
D6	US 3,946,122	Process of Preparing Margarine Products	Marzo-23-1976

3. **Falta de Novedad conforme al Artículo 16 de la Decisión 486.**

“Artículo 16. – Una invención se considerará nueva cuando no está comprendida en el estado de la técnica.

El estado de la técnica comprenderá todo lo que haya sido accesible al público por una descripción escrita u oral, utilización, comercialización o cualquier otro medio antes de la fecha de presentación de la solicitud de patente o, en su caso, de la prioridad reconocida.”

Como ya se mencionó anteriormente, los documentos pertenecientes al estado del arte (D1 a D6), se refieren a procesos para la producción y a los productos sustitutos de mantequilla obtenidos. En este punto, al llevar a cabo una comparación elemento por elemento de los alimentos y procesos enseñados en cada uno de los documentos del estado del arte con el objeto revelado en la solicitud Colombiana No. 09-126.834, encontramos que, tanto en los documentos del estado del arte, como en la solicitud en cuestión **se emplean los mismos componentes, cada uno de los cuales cumple la misma funcionalidad dentro del sustituto de mantequilla.**

Se puede apreciar, que la solicitud Colombiana No. 09-126.834, revela un sustituto de mantequilla industrial picada (o fermentada) con un sabor igual al de la mantequilla natural, lo cual ya era previamente conocido en el estado del arte, tal y como puede comprobarse en las enseñanzas de los documentos que hacen parte del estado del arte más cercano al objeto de la solicitud que es objeto de la presente oposición; en particular, las margarinas industriales en mezcla con saborizantes de mantequilla completamente idénticas a las mencionadas en forma muy general en la solicitud Colombiana 09-126.834.

En este punto es necesario llamar la atención de su Despacho, enfatizando en que el alcance de la solicitud en cuestión resulta demasiado amplio y general toda vez que la caracterización allí realizada incluye cualquiera de los sustitutos de mantequilla que ya se encuentran disponibles en el mercado.

Lo anterior resulta evidente cuando, en la solicitud objeto de oposición, se afirma que dicha solicitud se refiere a: “... un sustituto de mantequilla industrial picada que presenta un producto final alimenticio con aroma y sabor a lácteo (mantequilla). El sustituto de margarina picada de la invención se conforma por una mezcla de grasas vegetales, agua, sal, emulsificantes, saborizantes artificiales idénticos a los naturales, acidulantes, colorantes naturales, y conservantes.”.

Esta forma de caracterización tan general y amplia hace que cualquier sustituto de mantequilla que esté compuesto por grasas vegetales, agua, sal, emulsificantes, saborizantes artificiales idénticos a los naturales, acidulantes, colorantes y conservantes esté dentro del alcance de dicha solicitud.

Ahora bien, al comparar el producto de la solicitud en cuestión con lo revelado en el estado del arte más cercano, se encuentra que el objeto de la solicitud Colombiana No. 09-126.834 es un sustituto de mantequilla picada (fermentada), que corresponde a una emulsión ampliamente conocida en el medio panadero mundial y Colombiano.

En primer lugar, hay que llamar la atención de ese Despacho al hecho de que la mantequilla picada para panadería es elaborada desde antes de la presentación de la solicitud Colombiana No. 09-126.834, en forma artesanal a partir de margarina industrial a la cual se le incorpora suero de leche o crema de leche

para dar sabores fermentados. Adicionalmente, uno de los principios para la elaboración de una margarina industrial es el de obtener un producto muy cercano a la mantequilla láctea buscando constantemente la similitud en sus características de sabor y aroma.

Ahora bien, los ingredientes empleados en la elaboración de margarina industrial son ampliamente conocidos, y constan de una mezcla de aceites vegetales y/o aceite animal, agua, emulsificantes, sabores naturales o idénticos al natural (tales como el diacetil), acidulantes (ácido cítrico y/o láctico), colorante natural o sintético y conservantes (sorbato y/o benzoato), al igual que lo reclamado en la solicitud Colombiana No. 09-126.834, por lo cual todos y cada uno de los elementos que constituyen el sustituto de mantequilla reclamado, ya eran conocidos en el estado del arte. Es más, la misma asociación o mezcla de los componentes del sustituto para obtener una margarina industrial con sabor a mantequilla ya es también ampliamente conocida en el estado del arte, lo cual confirma que la mezcla que el solicitante pretende que le sea protegida carece por completo de novedad.

En vista de la relación de equivalencia existente entre el sustituto de mantequilla picada y la margarina industrial, diferentes autores presentan alternativas para obtener un sabor idéntico al sabor natural de la mantequilla. Por ejemplo, en el documento **US 2,527,785 (D1)** de 1948, los autores indican que ya habían sido aislados y caracterizados los componentes del sabor a mantequilla (ver columna 1, líneas 4 a 12 de D1). Adicionalmente, los autores del documento **US 4,906,490 (D2)** de 1990 presentan una alternativa de encapsulamiento del sabor a mantequilla para la implementación en margarinas industriales que pueden ser empleadas en la industria panadera.

En el documento **WO/1987/007477 (D3)**, los autores enseñan que la adición de sólidos de mantequilla natural de leche fermentada (a partir de una mezcla de los sólidos de mantequilla, agua y grasa) en una concentración de 0,3 a 5%, a una margarina industrial, permite que se desarrolle durante el horneado de los productos elaborados con dicha mezcla, el sabor fermentado típico y mejorado de una mantequilla natural.

Los autores del documento **US 4,414,229 (D4)** de 1981 presentan un sustituto de mantequilla: que es una margarina, con sabores idénticos al natural. El desarrollo del sabor idéntico al de la mantequilla natural se logra a través de la incorporación de una mezcla compuesta por agua destilada con crema de leche soluble lipolizada.

En el documento **US 4,447,463 (D5)** de 1982 se desarrolla el proceso y método de elaboración de mezclas de margarina y mantequilla con leche desnatada (crema), el desarrollo incluye las concentraciones para realizar la mezcla y las condiciones de proceso a las que debe someterse ésta para mantener su estabilidad, de igual forma el proceso para desnatar la leche.

En este punto es importante mencionar que existen en el mercado productos tipo “Melange” que son originalmente mezclas de margarina con mantequilla para mejorar el sabor y sus cualidades; estos productos son ampliamente reconocidos en Europa y se emplean en margarinas industriales y en esparcibles.

Por tanto, resulta claro en el estado del arte que, a las margarinas industriales se les puede incorporar derivados lácteos u otros ingredientes (tales como saborizantes artificiales) para proveer el sabor y aroma similar a mantequilla y en la actualidad diferentes proveedores de esencias y sabores artificiales ofrecen alternativas que están dirigidas a alcanzar el sabor deseado.

En consecuencia, las revelaciones contenidas en los documentos del estado del arte relacionado, demuestran de forma completamente irrefutable que existen productos idénticos a los reivindicados que

están disponibles comercialmente desde antes de la presentación de la solicitud de patente en cuestión, como lo prueban los documentos que se anexan con esta oposición. Por lo tanto, la materia objeto de la solicitud de patente CO 09-126.834 se considera previamente conocida en su totalidad, careciendo por completo de novedad, y por tanto, no cumple con el requisito de patentabilidad exigido en los artículos 14 y 16 de la Decisión 486.

4. Carencia de Nivel Inventivo, de acuerdo con el Artículo 18 de la Decisión 486.

"Artículo 18. - Se considerará que una invención tiene nivel inventivo, si para una persona del oficio normalmente versada en la materia técnica correspondiente, esa invención no hubiese resultado obvia ni se hubiese derivado de manera evidente del estado de la técnica".

En el numeral anterior se demostró claramente que, en lo revelado previamente en el estado del arte más cercano, existen sustitutos de mantequilla idénticos a la pretendida en la solicitud Colombiana 09-126.834, por lo cual no sería necesario discutir la altura inventiva toda vez que al ser productos iguales no existiría de ninguna manera nivel inventivo en la materia objeto de la solicitud en cuestión.

Sin embargo, en el presente aparte se le probará a su Despacho que no sólo ya existían en el estado del arte productos idénticos a los ahora pretendidos por el solicitante de la patente en cuestión, sino que, dentro del estado del arte, existían claras indicaciones o enseñanzas que permiten a una persona medianamente versada en la materia llegar a obtener el mismo producto partiendo de los conocimientos básicos de dicha persona y de las enseñanzas reveladas en los documentos que hacen parte del estado del arte más cercano.

En efecto, una persona medianamente versada en la materia encontrará que, dentro de las enseñanzas de los documentos del estado del arte -los cuales son anteriores a la fecha de presentación de la solicitud Colombiana objeto de oposición- se encuentran las indicaciones y enseñanzas necesarias para llegar a resolver el problema técnico planteado por el solicitante de la invención contenida en el Expediente No. 09-126.834, de la misma forma en que se soluciona en dicha solicitud.

Para poder demostrar lo obvia y evidente que resulta la materia reclamada en la solicitud objetada, tan sólo basta con remitirse a los documentos citados en los cuales la persona medianamente versada en el tema fácilmente podrá encontrar que, a lo largo de dichos documentos, se indican las ventajas que se obtienen al combinar una margarina del tipo industrial (mezcla de grasas de origen vegetal) con saborizantes que le proporcionen el sabor a mantequilla idéntico al natural, empleando tanto saborizantes naturales (por ejemplo, crema o mantequilla natural) como artificiales (por ejemplo, diacetil).

Resulta evidente entonces que, de lo revelado en los documentos que pertenecen al estado del arte, cualquier persona medianamente versada en la técnica, encontraría en dichos documentos bien sea solos o en combinación, las indicaciones suficientes para obtener un sustituto de mantequilla a partir de margarina industrial y a la vez mejorar las características de sabor para que sea igual al de la mantequilla natural incluyendo un saborizante artificial.

En vista de lo anterior, es evidente que, cuando el solicitante intenta resolver el problema técnico de proporcionar un sustituto de mantequilla con un sabor igual al de la mantequilla natural, está recurriendo al mero ajuste de composiciones previamente conocidas las cuales ya habían sido propuestas incluyendo saborizantes naturales de mantequilla (crema o mantequilla natural) o artificiales, tal y como se comprueba a partir de los documentos del estado del arte.

En consecuencia, el sustituto de mantequilla y los productos alimenticios obtenidos a partir de éste, objeto de la solicitud Colombiana No. 09-126.834 en cuestión, no cumplen con el requisito de altura o nivel inventivo, establecido por los Artículos 14 y 18 de la Decisión 486, en vista de que existen dentro de los conocimientos pertenecientes al arte previo de la industria alimenticia y específicamente de la industria panadera, claras indicaciones (ver el conjunto de conocimientos presentados, especialmente en los documentos citados) que constituyen una motivación más que razonable para que una persona medianamente versada en la materia lleve a cabo la obtención de un sustituto de mantequilla a partir de una mezcla de margarina industrial y un componente que da sabor a mantequilla natural. Por lo tanto, la solicitud de patente Colombiana No. 09-126.834, no reúne la altura inventiva exigida por la legislación vigente en nuestro país, y su concesión como patente constituiría una clara violación de la misma.

5. Conclusiones.

En primer lugar, resulta evidente que, a la luz de las composiciones de los productos sustitutos de mantequilla conocidos en los documentos del estado del arte (D1 a D6), es innegable la falta de novedad debido a que dichos documentos, demuestran la existencia previa de productos compuestos por los mismos componentes de la mezcla de sustituto de mantequilla que se pretende proteger, y que incluyen todos y cada uno de los detalles técnicos que comprenden la invención reivindicada en el documento Colombiano No. 09-126.834.

Adicionalmente, se ha demostrado que dentro de las enseñanzas del estado del arte anterior, ya existían claras indicaciones para motivar a una persona medianamente versada en la materia a llevar a cabo los reemplazos y las modificaciones necesarias para obtener las propiedades de sabor a mantequilla natural que son reclamadas por el solicitante del documento CO 09-126.834.

Por lo tanto, la solución propuesta por el solicitante del expediente 09-126.834, no sólo ya era conocida, sino que además resulta obvia y evidente a partir de dichos conocimientos contenidos en los documentos encontrados que son pertenecientes al estado del arte anterior, toda vez que son anteriores a la fecha de presentación de la solicitud objetada. En vista de lo anterior, resulta innegable que dicha solicitud de patente carece por completo de novedad y nivel inventivo, por lo que no cumple los requisitos exigidos en los artículos 14, 16 y 18 de la Decisión 486, vigente en nuestro país.

Como consecuencia de la anterior argumentación técnica, que demuestra la no patentabilidad de dicha solicitud, me permito solicitar a ese Despacho, se sirva negar el privilegio de patente solicitado para la materia reclamada en la solicitud de patente Colombiana No. 09-126.834.

Por último, respetuosamente me permito solicitar a este Despacho, se sirva declarar fundada la presente oposición a la concesión del privilegio de patente solicitado para la materia contenida en el expediente No. 09-126.834, toda vez, cómo quedó demostrado a lo largo del presente memorial, dicha solicitud carece de los requisitos de novedad y nivel inventivo, por lo cual dicha solicitud de patente debe ser denegada.

6. Pruebas.

Para probar los hechos en que se fundamentan las pretensiones de la presente oposición, solicitó a este Despacho, se sirva tener como pruebas los siguientes documentos de patente, de los cuales se aporta copia informal:

No.	Documento	Título	Fecha
D1	US 2,527,785	Butter Flavoring Composition	Agosto-21-1948
D2	US 4,906,490	Method of Producing Butter Flavored Granules	Marzo-06-1990
D3	WO/1987/007477	Margarine With fermentation Taste	Diciembre-17-1987
D4	US 4,414,229	Margarine and the like spread with Natural Butter Flavor	Noviembre-08-1983
D5	US 4,447,463	Process for Producing a Butter/Margarine Blend Product	Mayo-08-1984
D6	US 3,946,122	Process of Preparing Margarine Products	Marzo-23-1976

7. **Fundamento de Derecho.**

La oposición presentada mediante el presente escrito, se fundamenta en lo que establece el Artículo 42 de la Decisión 486 y demás normas concordantes.

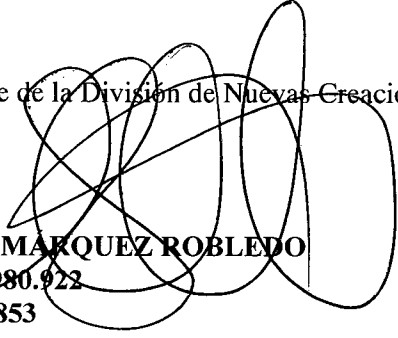
8. **Anexos.**

- Pruebas relacionadas en el numeral 6 de la presente oposición.
- Comprobante de pago de la tasa oficial por la presentación de la oposición. Copia de la oposición para traslado al solicitante.
- Poder especial a mi conferido por parte de C.I. SIGRA S.A.
- Certificado de Cámara y Comercio de mi representada.

9. **Notificaciones.**

Recibiré notificaciones en la Secretaría de este Despacho y en mi oficina de abogado situada en la Calle 98 No. 9-03, Oficina 701 en la ciudad de Bogotá D.C.

Del Señor Jefe de la División de Nuevas Creaciones,


SANTIAGO MÁRQUEZ ROBLEDO
C.C. No. 79.980.922
T.P. No. 131.853

Señores
SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO
DIVISIÓN DE SIGNOS DISTINTIVOS
E. S. D.

FABIO ENRIQUE MONTENEGRO ESCOBAR, mayor de edad y vecino de Bogotá, identificado como aparece al pie de mi firma, obrando en mi condición de representante legal de la sociedad **C.I. SOCIEDAD INDUSTRIAL DE GRASAS VEGETALES SIGRA S.A., C.I. SIGRA S.A.**, organizada y existente de conformidad con las leyes colombianas, domiciliada en Bogotá, e identificada con el NIT No. 860006127-4, respetuosamente manifiesto a éste Despacho que confiero **PODER ESPECIAL** pero amplio y suficiente a los doctores **SANTIAGO MÁRQUEZ ROBLEDO**, identificado con la cédula de ciudadanía número 79.980.922 y portador de la tarjeta profesional de abogado número 131.853 y/o **LUZ HELENA ADARVE GOMEZ**, identificada con la cédula de ciudadanía número 41.575.435 de Bogotá y portadora de la tarjeta profesional de abogado número 14.884 y/o **JUANITA ACOSTA GOMEZ**, identificada con la cédula de ciudadanía número 52.618.636 de Usaquén y portadora de la tarjeta profesional de abogado número 79.686, para que cualesquiera de ellos, actuando conjunta o individualmente adelanten las actuaciones necesarias dentro del proceso de oposición contra la solicitud de registro de la patente de invención denominada "SUSTITUTO DE MANTEQUILLA INDUSTRIAL PICADA PARA PANADERÍA.", solicitada por **ACEITES Y GRASAS VEGETALES S.A. ACEGRASAS S.A.**, tramitada bajo el Expediente No. 09 126.834.

Los apoderados aquí designados están ampliamente facultados para abonar todos los impuestos y efectuar cualquier otro pago determinado por la Ley, para recibir documentos, valores, transigir, someter a árbitros, desistir, renunciar, sustituir el presente mandato, revocar dichas sustituciones, presentar los correspondientes recursos de ley e incluso para iniciar acciones de nulidad ante el Consejo de Estado.

Del Señor Jefe,



FABIO ENRIQUE MONTENEGRO ESCOBAR
C.C. No. 3.227.693 de Usaquén
C.I. SIGRA S.A.
Representante Legal



DILIGENCIA DE PRESENTACIÓN
PERSONAL Y RECONOCIMIENTO

MYRIAM RAMOS DE SAAVEDRA
NOTARIA 49 BOGOTÁ D.C.

Bogotá D.C. 01/07/2011

m66k78mhyhk6hyy

La Suscrita(o) Notaria(o) certifica que este escrito fué presentado
por quien dijo llamarse:

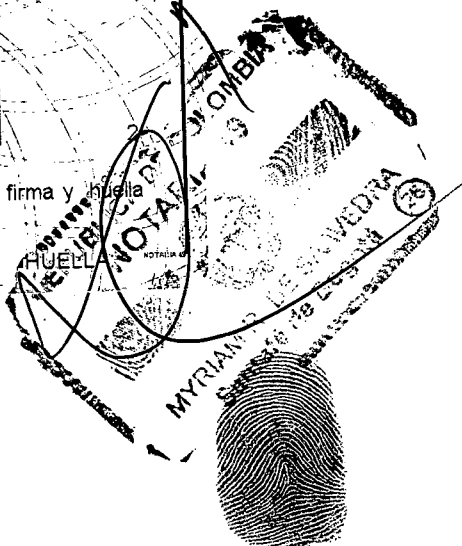
MONTENEGRO ESCOBAR FABIO

Identificado con C.C. 3227693

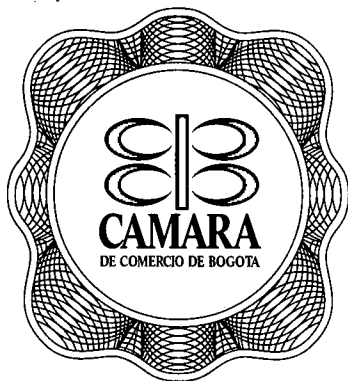


quien declaró que su contenido es cierto y que la firma y huella
puestas en él son suyas.

NOTARIA D. FIRMA



[Handwritten signature]



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CAMARA DE COMERCIO DE BOGOTA

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CERTIFICADO DE EXISTENCIA Y REPRESENTACION LEGAL O INSCRIPCION DE DOCUMENTOS

LA CAMARA DE COMERCIO DE BOGOTA, CON FUNDAMENTO EN LAS MATRICULAS E INSCRIPCIONES DEL REGISTRO MERCANTIL

CERTIFICA:

NOMBRE : C I SOCIEDAD INDUSTRIAL DE GRASAS VEGETALES SIGRA S A Y PODRA UTILIZAR LA SIGLA C I SIGRA S A

SIGLA : C I SIGRA S A

N.I.T. : 860006127-4

DOMICILIO : BOGOTA D.C.

CERTIFICA:

MATRICULA NO: 00012756 DEL 29 DE MARZO DE 1972

CERTIFICA:

DIRECCION DE NOTIFICACION JUDICIAL : CR 46 13 95

MUNICIPIO : BOGOTA D.C.

EMAIL DE NOTIFICACION JUDICIAL : belsi.contreras@sgra.com

DIRECCION COMERCIAL : CR 46 13 95

MUNICIPIO : BOGOTA D.C.

EMAIL COMERCIAL : belsi.contreras@sgra.com

CERTIFICA:

CONSTITUCION: ESCRITURA PUBLICA NO.1648, NOTARIA 5 DE BOGOTA, EL-6 DE ABRIL DE 1.957, INSCRITA EL 9 DE ABRIL DE 1.957, BAJO EL NO. 36.932 DEL LIBRO RESPECTIVO, SE CONSTITUYO LA SOCIEDAD DENOMINADA SOCIEDAD INDUSTRIAL LIMITADA DE GRASAS VEGETALES SIGRA.

CERTIFICA:

QUE POR ESCRITURA PUBLICA NO. 295, NOTARIA 32 DE BOGOTA EL 9 DE MAYO DE 1.982, INSCRITA EN ESTA CAMARA DE COMERCIO EL 12 DE MAYO DE 1982, BAJO EL NO. 115.653 DEL LIBRO IX, LA SOCIEDAD ADICIONO A SU RAZON SOCIAL LA SIGLA SIGRA S.A. E INTRODUJO OTRAS REFORMAS.

CERTIFICA :

QUE POR ESCRITURA PUBLICA NO. 1303 DEL 07 DE JUNIO DE 2004 DE LA NOTARIA 52 DE BOGOTA D.C., INSCRITA EL 25 DE JUNIO DE 2004 BAJO EL NUMERO 00940588 DEL LIBRO IX, LA SOCIEDAD CAMBIO SU NOMBRE DE: SOCIEDAD INDUSTRIAL DE GRASAS VEGETALES SIGRA S.A., POR EL DE: SOCIEDAD INDUSTRIAL DE GRASAS VEGETALES SIGRA S. A. Y PODRA UTILIZAR LA SIGLA SIGRA S.A.-

CERTIFICA :

QUE POR ESCRITURA PUBLICA NO. 2581 DE LA NOTARIA 52 DE BOGOTA D.C. DEL 28 DE OCTUBRE DE 2004, INSCRITA EL 02 DE NOVIEMBRE DE 2004 BAJO EL NUMERO 960096 DEL LIBRO IX, LA SOCIEDAD DE LA REFERENCIA CAMBIO SU NOMBRE DE: SOCIEDAD INDUSTRIAL DE GRASAS VEGETALES SIGRA S. A. Y PODRA UTILIZAR LA SIGLA SIGRA S.A. , POR EL DE : C.I. SOCIEDAD INDUSTRIAL DE GRASAS VEGETALES SIGRA S.A. Y PODRA UTILIZARLA SIGLA C.I. SIGRA S.A.

CERTIFICA:

QUE POR ESCRITURA PUBLICA NO. 7179, NOTARIA 5 DE BOGOTA EL 28 DE-OCTUBRE DE 1.961, INSCRITA EN ESTA CAMARA DE COMERCIO EL 16 DE NO-
VIEMBRE DE 1.961, BAJO EL NO. 30.109 DEL LIBRO RESPECTIVO, LA SO-
CIEDAD SE TRANSFORMO DE LIMITADA EN ANONIMA BAJO EL NOMBRE DE SO-
CIEDAD INDUSTRIAL DE GRASAS VEGETALES SIGRA S.A.

CERTIFICA:

REFORMAS:

ESCRITURAS NO.	FECHA	NOTARIA	INSCRIPCION
6750	10-XII -1957	5 BOGOTA	38.831-18-XII -1957
1408	20-III -1958	5 BOGOTA	39.691- 1-IV -1958
1411	20-III -1958	5 BOGOTA	39.747- 8-IV -1958
3942	7-VII -1958	5 BOGOTA	40.530-16-VII -1958
845	19-II -1959	5 BOGOTA	42.431-26-II -1959
1713	2-IX -1959	5 BOGOTA	42.801-10-IV -1959
6424	24-IX -1959	5 BOGOTA	44.364-29-IX -1959
4080	7-VII -1960	5 BOGOTA	46.933-13-VII -1960
6244	10-X -1960	5 BOGOTA	47.829-20-X -1960
8016	20-XII -1960	5 BOGOTA	48.440-23-XII -1960
6399	30-IX -1961	5 BOGOTA	51.233- 7-X -1961
6666	10-X -1961	5 BOGOTA	51.314-17-X -1961
1446	12-III -1963	5 BOGOTA	51.516-14-III -1963
690	28-II -1972	4 BOGOTA	4.575- 5-IX -1972
2322	19-VI -1989	7 BOGOTA	274.910-14-IX -1989
1640	22-IV- 1990	7 BOGOTA	293.475- 8-V- 1990
2321	25 -V- 1992	7 STAFE BTA	367.825- 9-VI- 1992
5529	3-XI- 1993	7 STAFE BTA	427.139- 12-XI -1993
3176	13-VII-1995	7 STAFE BTA	502.208- 27-VII-1995
787	6- III-1996	7 STAFE BTA	531.544 20- III-1996

CERTIFICA:

REFORMAS:

E.P. NO.	FECHA	NOTARIA	CIUDAD	FECHA	NO. INSC.
0001303	2004/06/07	0052	BOGOTA D.C.	2004/06/25	00940588
0002581	2004/10/29	0052	BOGOTA D.C.	2004/11/02	00960096
0001071	2006/04/27	0052	BOGOTA D.C.	2006/08/03	01070557
0001683	2007/08/13	0052	BOGOTA D.C.	2007/09/03	01155313
2684	2009/10/13	0052	BOGOTA D.C.	2009/12/22	01349429
1998	2010/10/21	0050	BOGOTA D.C.	2010/10/25	01423895
1212	2011/05/30	0050	BOGOTA D.C.	2011/06/09	01486431

CERTIFICA:

VIGENCIA: QUE LA SOCIEDAD NO SE HALLA DISUELTA. DURACION HASTA EL
31 DE DICIEMBRE DE 2030 .

CERTIFICA:

OBJETO SOCIAL: LA SOCIEDAD TIENE POR OBJETO SOCIAL PRINCIPAL EL
DESARROLLO DE LAS SIGUIENTES ACTIVIDADES: 1. EFECTUAR OPERACIONES DE
COMERCIO EXTERIOR Y PARTICULARMENTE ORIENTAR SUS ACTIVIDADES HACIA LA
PROMOCIÓN, COMERCIALIZACIÓN Y VENTA DE LOS PRODUCTOS COLOMBIANOS EN
LOS MERCADOS EXTERNOS; 2. LA ELABORACIÓN, COMERCIALIZACIÓN,
DISTRIBUCIÓN Y EXPORTACIÓN DE PRODUCTOS GRASOS FABRICADOS A PARTIR DEL
PROCESAMIENTO DE GRASAS Y ACEITES DE ORIGEN VEGETAL, ANIMAL Y/O UNA
MEZCLA DE ELLOS; 3. LA PRODUCCIÓN, DISTRIBUCIÓN Y EXPORTACIÓN DE
MATERIAS PRIMAS DE DIVERSAS CLASES QUE SE EMPLEEN EN LA ELABORACIÓN DE
PRODUCTOS GRASOS, ASÍ COMO LAS DE LOS IMPLEMENTOS, MAQUINARIAS,
EQUIPOS MUEBLES Y DEMÁS ELEMENTOS QUE SE UTILICEN O PUEDAN UTILIZARSE
PARA LA ELABORACIÓN, COMERCIALIZACIÓN Y DISTRIBUCIÓN DE DICHOS
PRODUCTOS GRASOS O DE LOS SUBPRODUCTOS ELABORADOS PARA ESTE FIN Y PARA
LA TRANSFORMACIÓN Y DISTRIBUCIÓN DE LOS SUBPRODUCTOS RESULTANTES DE



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ESTOS PROCESOS; 4. LA VENTA, COMERCIALIZACIÓN, DISTRIBUCIÓN, IMPORTACIÓN, EXPORTACIÓN Y VENTA DE LOS BIENES PRODUCIDOS O TRANSFORMADOS POR ELLA DIRECTAMENTE, POR CUENTA DE TERCEROS Y/O PARTICIPACIÓN EN LOS MISMOS, SIEMPRE QUE AQUELLOS, TENGAN RELACIÓN DIRECTA CON EL OBJETO SOCIAL ANTES MENCIONADO. 5. LA CONSTITUCIÓN DE SOCIEDADES COMERCIALES E INDUSTRIALES EN EL TERRITORIO NACIONAL O EN EL EXTERIOR Y LA PARTICIPACIÓN EN ESTAS COMO SOCIA O ACCIONISTA. 6. LA IMPORTACIÓN DE BIENES O INSUMOS CON LA FINALIDAD DE ABASTECER EL MERCADO INTERNO O PARA LA FABRICACIÓN DE PRODUCTOS EXPORTABLES; 7. LA IMPLEMENTACIÓN Y DESARROLLO DE CUALQUIER ACTIVIDAD AGRÍCOLA COMO EL CULTIVO DE PRODUCTOS DE CORTO Y TARDÍO RENDIMIENTO, ASÍ COMO EL CULTIVO DE ÁRBOLES MADERABLES, ENTRE OTROS. DENTRO DE LOS PRODUCTOS QUE LA SOCIEDAD PUEDE CULTIVAR SE ENCUENTRA LA PALMA AFRICANA, EL CAUCHO Y EL CACAO, ENTRE OTROS; 8. LA IMPLEMENTACIÓN Y DESARROLLO DE TODO TIPO DE ACTIVIDADES PECUARIAS SIN LIMITACIÓN, TALES COMO LA CRÍA, LEVANTE Y CEBAS DE GANADO, ENTRE OTROS. PARA EL CUMPLIMIENTO DE SU OBJETO SOCIAL PRINCIPAL, LA SOCIEDAD PODRÁ: 1. REPRESENTAR A CUALQUIER COMPAÑÍA NACIONAL O EXTRANJERA PARA EFECTOS DE COMERCIALIZAR, DISTRIBUIR Y ELABORAR CUALQUIER CLASE DE PRODUCTOS RELACIONADOS CON EL OBJETO SOCIAL ANTERIOR 2. ADQUIRIR, ARRENDAR, ADMINISTRAR, GRAVAR, PRESTAR Y ENAJENAR BIENES MUEBLES E INMUEBLES; DARLOS EN ADMINISTRACIÓN O TOMARLOS EN ARRIENDO. 3. ADQUIRIR, POSEER, DAR O TOMAR EN ARRENDAMIENTO O A OTRO TÍTULO ONEROSO Y ENAJENAR, EQUIPOS, INSTALACIONES, MAQUINARIA INDUSTRIAL, MUEBLES U OTROS IMPLEMENTOS O ACTIVOS DESTINADOS A LA DOTACIÓN, FUNCIONAMIENTO Y EXPLOTACIÓN DE EMPRESAS INDUSTRIALES, COMERCIALES O DE SERVICIOS. 4. FORMAR PARTE DE OTRAS SOCIEDADES CUALQUIERA QUE SEA SU NATURALEZA Y OBJETO SOCIAL, ADQUIRIENDO O SUSCRIBIENDO ACCIONES, PARTES O CUOTAS DE INTERÉS SOCIAL O HACIENDO APORTES DE CUALQUIER ESPECIE O FUSIONARSE CON OTRAS SOCIEDADES 5. ADQUIRIR, POSEER, Y EXPLOTAR PATENTES, NOMBRES COMERCIALES, MARCAS, SECRETOS INDUSTRIALES, LICENCIAS U OTROS DERECHOS CONSTITUTIVOS DE PROPIEDAD INDUSTRIAL; LA CONCESIÓN DE SU EXPLOTACIÓN A TERCEROS, ASÍ COMO LA ADQUISICIÓN DE CONCESIONES PARA SU EXPLOTACIÓN. 6. INVERTIR EN BIENES MUEBLES E INMUEBLES EFECTUAR SU NEGOCIACIÓN, VENTA PERMUTA, GRAVAMEN, ETC, PUDIENDO RESPECTO DE LOS INMUEBLES, PROMOVER O EJECUTAR TODOS LOS NEGOCIOS RELACIONADOS CON FINCA RAÍZ, 7. EFECTUAR OPERACIONES DE CRÉDITO RELACIONADAS CON LA ADQUISICIÓN O VENTA DE BIENES MUEBLES O INMUEBLES. 8. CELEBRAR CONTRATOS DE MUTUO, CON O SIN INTERESES. 9. CONSTITUIR CAUCIONES REALES O PERSONALES EN GARANTÍA DE LAS OBLIGACIONES QUE CONTRAIGA LA SOCIEDAD, O SOCIEDADES O EMPRESAS EN LAS QUE TENGA INTERÉS, SIEMPRE QUE, EN EL ÚLTIMO CASO SE CUENTE CON LA PREVIA APROBACIÓN DE LA JUNTA DIRECTIVA. 10. INVERTIR SUS FONDOS O DISPONIBILIDADES, EN ACTIVOS FINANCIEROS O VALORES MOBILIARIOS TALES COMO TÍTULOS EMITIDOS POR INSTITUCIONES FINANCIERAS O ENTIDADES PÚBLICAS, CÉDULAS HIPOTECARIAS,

TÍTULOS VALORES, BONOS, ENTRE OTROS, ASÍ COMO SU NEGOCIACIÓN, VENTA, PERMUTA O GRAVAMEN. 11. COMPRAR Y VENDER, IMPORTAR Y EXPORTAR CUALQUIER CLASE DE BIENES, ARTÍCULOS O MERCADERÍAS RELACIONADAS CON LOS NEGOCIOS PRINCIPALES, QUE FACILITEN EL CUMPLIMIENTO DEL OBJETO SOCIAL. 12. PARTICIPAR EN LICITACIONES Y CONCURSOS PÚBLICOS Y PRIVADOS O EN CONTRATACIONES DIRECTAS. 13. PRESTAR SERVICIOS RELATIVOS A LA COMERCIALIZACIÓN DE PRODUCTOS DERIVADOS DE GRASAS Y ACEITES VEGETALES, ANIMALES Y/O MEZCLAS, MATERIAS PRIMAS DE DIVERSAS CLASES QUE SE EMPLEEN EN LA ELABORACIÓN DE TALES GRASAS Y ACEITES, ASÍ COMO LOS DEMÁS IMPLEMENTOS Y ELEMENTOS QUE SE UTILICEN O PUEDAN UTILIZARSE PARA LA PRODUCCIÓN, TRANSFORMACIÓN, DISTRIBUCIÓN Y COMERCIALIZACIÓN DE LOS MENCIONADOS PRODUCTOS. 14. EN GENERAL, EJECUTAR, DESARROLLAR Y LLEVAR A TÉRMINO TODOS AQUELLOS ACTOS O CONTRATOS RELACIONADOS DIRECTAMENTE CON LOS QUE CONSTITUYAN SU OBJETO SOCIAL.

CERTIFICA:

CAPITAL:

** CAPITAL AUTORIZADO **

VALOR : \$2,600,000,000.00
NO. DE ACCIONES : 2,600,000,000.00
VALOR NOMINAL : \$1.00

** CAPITAL SUSCRITO **

VALOR : \$1,536,380,220.00
NO. DE ACCIONES : 1,536,380,220.00
VALOR NOMINAL : \$1.00

** CAPITAL PAGADO **

VALOR : \$1,536,380,220.00
NO. DE ACCIONES : 1,536,380,220.00
VALOR NOMINAL : \$1.00

CERTIFICA:

** JUNTA DIRECTIVA: PRINCIPAL (ES) **

QUE POR ACTA NO. 91 DE ASAMBLEA DE ACCIONISTAS DEL 30 DE MARZO DE 2011, INSCRITA EL 9 DE JUNIO DE 2011 BAJO EL NUMERO 01486420 DEL LIBRO IX, FUE (RON) NOMBRADO (S):

NOMBRE	IDENTIFICACION
PRIMER RENGLON	
SIN ACEPTACION	*****
SEGUNDO RENGLON	
SIN ACEPTACION	*****
TERCER RENGLON	
RIBON CATALA MIGUEL GERMAN	C.C. 000000003229300
CUARTO RENGLON	
SIN ACEPTACION	*****
QUINTO RENGLON	
SIN ACEPTACION	*****

** JUNTA DIRECTIVA: SUPLENTE (S) **

QUE POR ACTA NO. 91 DE ASAMBLEA DE ACCIONISTAS DEL 30 DE MARZO DE 2011, INSCRITA EL 9 DE JUNIO DE 2011 BAJO EL NUMERO 01486420 DEL LIBRO IX, FUE (RON) NOMBRADO (S):

NOMBRE	IDENTIFICACION
PRIMER RENGLON	
SIN ACEPTACION	*****
SEGUNDO RENGLON	
SIN ACEPTACION	*****
TERCER RENGLON	

CUANDO SEA DEL CASO, CON SUS NOTAS, CORTADOS AL FIN DEL RESPECTIVO EJERCICIO, JUNTO CON LOS DOCUMENTOS QUE SEÑALE LA LEY Y EL INFORME DE GESTION, ASI COMO EL ESPECIAL CUANDO SE DE LA CONFIGURACION DE UN GRUPO EMPRESARIAL, TODO LO CUAL SE PRESENTARA A LA ASAMBLEA GENERAL DE ACCIONISTAS. AL IGUAL QUE LOS DEMAS ADMINISTRADORES, DEBERA RENDIR CUENTAS COMPROBADAS DE SU GESTION AL FINAL DE CADA EJERCICIO, DENTRO DEL MES SIGUIENTE A LA FECHA EN EL CUAL SE RETIRE DE SUS CARGO Y CUANDO SE LAS EXIJA EL ORGANO QUE SEA COMPETENTE PARA ELLO. PARA TAL EFECTO, SE PRESENTARAN LOS ESTADOS FINANCIEROS QUE FUEREN PERTINENTES, JUNTO CON UN INFORME DE GESTION. CUMPLIR LOS DEMAS DEBERES QUE LE SEÑALEN LOS REGLAMENTOS DE LA SOCIEDAD Y LOS QUE LE CORRESPONDEN POR EL CARGO QUE EJERCE. PARAGRAFO : EN TODO CASO EL GERENTE GENERAL TENDRA ATRIBUCIONES SUFICIENTES PARA ORDENAR QUE SE EJECUTE O CELEBRE CUALQUIER ACTO O NEGOCIO COMPRENDIDO DENTRO DEL OBJETO SOCIAL Y PARA TOMAR LAS DETERMINACIONES NECESARIAS EN ORDEN A QUE LA SOCIEDAD CUMPLA SUS FINES, CUANDO LA CUANTIA NO EXCEDA DE UN MIL (1000) SALARIOS MINIMOS LEGALES MENSUALES. EN CASO DE QUE SE REQUIERA SOBREPASAR DICHA CUANTIA, LA AUTORIZACION DEBERA SER DADA POR LA JUNTADIRECTIVA.-

CERTIFICA:

** REVISOR FISCAL **

QUE POR DOCUMENTO PRIVADO DE REVISOR FISCAL DEL 30 DE MARZO DE 2011, INSCRITA EL 9 DE JUNIO DE 2011 BAJO EL NUMERO 01486435 DEL LIBRO IX, FUE (RON) NOMBRADO (S):

NOMBRE	IDENTIFICACION
REVISOR FISCAL PRINCIPAL	
RUBIO TELLEZ LUIS ENRIQUE	C.C. 000000019189135
REVISOR FISCAL SUPLENTE	
SAMACA SANCHEZ LIGIA INES	C.C. 000000020320002

QUE POR ACTA NO. 91 DE ASAMBLEA DE ACCIONISTAS DEL 30 DE MARZO DE 2011, INSCRITA EL 9 DE JUNIO DE 2011 BAJO EL NUMERO 01486423 DEL LIBRO IX, FUE (RON) NOMBRADO (S):

NOMBRE	IDENTIFICACION
REVISOR FISCAL PERSONA JURIDICA	
RUBIO SAMACA Y CIA LTDA	N.I.T. 000008000848538

CERTIFICA:

PERMISO DE FUNCIONAMIENTO: QUE POR RESOLUCION NO.0062 DEL 25 DE ENERO DE 1.962, INSCRITA EL 26 DE ENERO DE 1.962, BAJO EL NUMERO 30301 DEL LIBRO RESPECTIVO, LA SUPERINTENDENCIA DE SOCIEDADES OTORGO PERMISO DEFINITIVO DE FUNCIONAMIENTO.-----

CERTIFICA:

QUE LA SOCIEDAD TIENE MATRICULADOS LOS SIGUIENTES ESTABLECIMIENTOS:

NOMBRE : SOCIEDAD INDUSTRIAL DE GRASAS VEGETALES SIGRA
MATRICULA NO : 00073805 DE 30 DE ABRIL DE 1976
RENOVACION DE LA MATRICULA : EL 25 DE MARZO DE 2011
ULTIMO AÑO RENOVADO : 2011

NOMBRE : COGRA INDUSTRIAL PANADERIA
MATRICULA NO : 01179270 DE 3 DE MAYO DE 2002
RENOVACION DE LA MATRICULA : EL 25 DE MARZO DE 2011
ULTIMO AÑO RENOVADO : 2011

CERTIFICA:

DE CONFORMIDAD CON LO ESTABLECIDO POR LA LEY 962 DE 2005, LOS ACTOS DE REGISTRO AQUI CERTIFICADOS QUEDAN EN FIRME CINCO (5) DIAS HABILES



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DESPUES DE LA FECHA DE INSCRIPCION, SIEMPRE QUE NO SEAN OBJETO DE RECURSOS EN LA VIA GUBERNATIVA.

* * * EL PRESENTE CERTIFICADO NO CONSTITUYE PERMISO DE * * *
 * * * FUNCIONAMIENTO EN NINGUN CASO * * *

SEÑOR EMPRESARIO, SI SU EMPRESA TIENE ACTIVOS INFERIORES A 30.000 SMLMV Y UNA PLANTA DE PERSONAL DE MENOS DE 200 TRABAJADORES, USTED TIENE DERECHO A RECIBIR UN DESCUENTO EN EL PAGO DE LOS PARAFISCALES DE 75% EN EL PRIMER AÑO DE CONSTITUCION DE SU EMPRESA, DE 50% EN EL SEGUNDO AÑO Y DE 25% EN EL TERCER AÑO. LEY 590 DE 2000 Y DECRETO 525 DE 2009.

RECUERDE INGRESAR A www.supersociedades.gov.co PARA VERIFICAR SI SU EMPRESA ESTA OBLIGADA A REMITIR ESTADOS FINANCIEROS. EVITE SANCIONES.

EL SECRETARIO DE LA CAMARA DE COMERCIO,

** CERTIFICADO SIN COSTO PARA AFILIADO **

DE CONFORMIDAD CON EL DECRETO 2150 DE 1995 Y LA AUTORIZACION IMPARTIDA POR LA SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO, MEDIANTE EL OFICIO DEL 18 DE NOVIEMBRE DE 1996, LA FIRMA MECANICA QUE APARECE A CONTINUACION TIENE PLENA VALIDEZ PARA TODOS LOS EFECTOS LEGALES

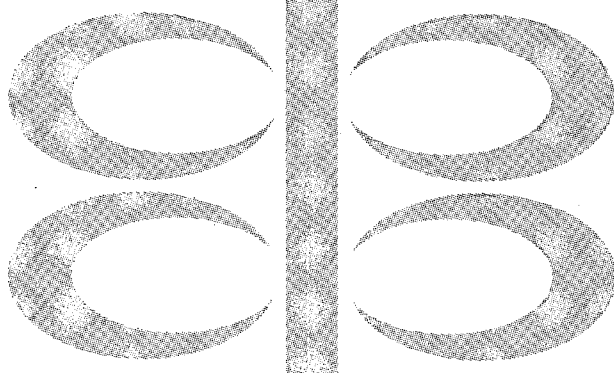
Transeau



* * *

NO ES VALIDO POR ESTA CARA

* * *



Patented Oct. 31, 1950

2,527,785

UNITED STATES PATENT OFFICE

2,527,785

BUTTER FLAVORING COMPOSITION

Jack W. Armstrong, Chicago, Ill., assignor to Food Technology, Inc., Chicago, Ill., a corporation of Illinois

No Drawing. Application August 21, 1948,
Serial No. 45,571

5 Claims. (Cl. 99-140)

1

This invention relates in general to the flavoring of foods, and in particular to an artificial butter flavoring composition.

The flavoring components of butter have long been essential in the preparation of food products having desirable taste characteristics. These natural occurring flavoring components were isolated and identified by the early chemists as being essentially butyric acid and esters thereof. It was found that butyric acid and esters thereof present in minute quantities imparted a sharpness to food products which was very desirable. With the advent of large scale food processing methods such as baking and candy making, the use of butter has been supplanted by the use of other shortening compositions which supply the required fats for the food processing. In order to achieve the desirable taste characteristics of the butter flavoring compounds it has become necessary to add synthetic flavoring ingredients to foods. Butyric acid and the esters of butyric acid have been employed in a large number of processes in which butter was formerly used. Butyric acid and its esters have certain limitations which make their use in food products rather difficult. First of all, the amount of the compounds must be very carefully controlled because only a very small quantity may be employed. Butyric acid in particular must be used in minute quantities because too large a concentration makes the food product very undesirable to taste. The taste and odor of rancid butter becomes very strong when only a very small quantity of butyric acid is used.

A further serious limitation on the use of butyric acid and its esters is the high volatility of these materials. At the temperatures ordinarily encountered in baking or candy making, the butyric acid and the esters thereof are very rapidly volatilized and lost. In fact, heat of any sort will cause a rapid loss of these compounds.

It is an object of this invention to provide butter flavors which remain stable upon heating and are not readily volatilized.

Another object of this invention is to provide a method for uniformly dispersing the butter flavoring components throughout a food composition.

A further object of this invention is to provide an artificial butter flavoring composition which will slowly disassociate in such a way as to provide a steady source of flavoring for a food product.

These and other objects and advantages will become more apparent from the following examples and description.

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According to the present invention, butter flavor components are added to food compositions in the form of non-volatile salts of butyric acid which disassociate slowly upon introduction into an acid medium. The use of non-volatile salts prevents volatilization of the flavoring compositions during the heating of the foods. Hence, the butter flavoring compound is not baked off by the heat of baking operations, nor is it lost during the processing of candies. Gradual hydrolysis of butyric acid salts in which a uniform amount of butyric acid is released slowly over a considerable length of time is accomplished by buffering the salts to keep them slightly on the alkaline side until they are introduced into food compositions which are acid in nature.

A typical butter flavor mix is composed of the esters of butyric acid, higher fatty acids, such as the homologues of butyric acid containing 5, 6, 7, or 8 carbon atoms, various essential oils such as oil of bitter almond and carriers or fillers, such as starch, flour, or sugar. Such a typical butter flavor mix very readily loses its flavoring ability when heated, as in the case of baking or cooking. It has now been found that an artificial butter flavor concentrate which contains the non-volatile salts of butyric acid retains its flavoring characteristics throughout the entire food processing operation. As an example of a butter flavor concentrate which is quite stable to heating, I may prepare a concentrate according to the following formula:

	Percent by weight
Flavors and essential oils	59.15
Higher fatty acids	10.00
Esters of butyric acid	23.00
Sodium butyrate	7.70
Buffer salts	0.15

The concentrate shown above is only a preferred embodiment of the invention which contemplates the addition of the butyric acid salts in a wide range of concentrations depending upon the use to which the flavor is to be put. It is feasible to employ from 3% to 40% by weight of butyric acid salts in the concentrate formula outlined above. Since the butyric acid salts are so strong as to ruin the flavor of food if employed in too large amounts, it becomes necessary to control the addition of salts carefully and to achieve thorough dispersion throughout the food product. It has been found desirable, therefore, to incorporate the concentrate shown above into a butter flavor mix which contains from 0.25% to 5% by weight of the butter flavor concentrate and 95% to 99.75% by weight of a filler or carrier such as starch, flour, or sugar. The concentrate

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and the filler are very thoroughly mixed to insure complete dispersion of the butyric acid salts throughout the mix. A preferred mix may be compounded using 1% butter flavor concentrate and 99% filler.

The butter flavor mix which contains only a very small amount of butyric acid salts intimately mixed therewith may be incorporated into any type of food composition where it is desirable to achieve the butter flavor. For example, a typical pound cake may be made up according to the following formula:

Pound cake formula

350 grams flour
350 grams sugar
210 grams shortening
20 grams milk powder
10 grams salt
130 grams water
218 grams eggs

Sift flour twice. Place all ingredients in large mixing bowl. Mix on low speed one minute and scrape well. Mix on second speed five minutes and scrape. Mix on second speed five minutes longer and scrape. Finish mixing on second speed for two minutes. Do not scrape. Scale 2½ pounds into paper lined pans, very lightly creased, or lined with brown paper. Bake at 325 degrees F. for 1½ hours.

To the above formula should be added 12.8 grams of the butter flavor mix containing filler. This is approximately 1% butter flavor mix based on the weight of the pound cake formula before baking. In this example it has been found that the butyric acid salts do not volatilize to any extent, and further, that they have an inhibiting effect upon the volatilization of the butyric acid esters. Hence, the butter flavor components remain substantially the same throughout the processing and baking operations. The pH of the cake formula is slightly below 7 and this acidity causes gradual hydrolysis of the butyric acid salts throughout the processing operation. It will be noted that hydrolysis of the salts was prohibited by use of the buffer component until the salts came into contact with the slightly acid cake formula. It will be apparent that the buffer employed must be weak enough so that it will not prevent the change-over of the butter flavor concentrate to the acid side upon contact with cake batter.

The butter flavor concentrate may be employed as such or in the form of the filled mix in the flavoring of other food products in which a butter flavor is desirable. In addition to the pound cake described above, the butter flavor concentrate may be advantageously employed in white cakes, yellow cakes, sponge cakes, chocolate cakes and devils food cakes, in yeast fermented dough, bread and rolls, in candies and other confections, cookies, crackers and the like. It is only essential that the food product be slightly acid (say pH 6 to 7) in nature to effect hydrolysis of the salts of butyric acid.

While the butyric acid salts are preferably employed in concentrates and mixes, as previously described, it should be understood that they may be added directly to the food composition without undesirable results. When directly added, it should be kept in mind that the butyric acid salts must be thoroughly dispersed throughout the entire food product in order that local high concentrations will not spoil the taste of the food. Sodium butyrate and potassium butyrate are the most readily available of the butyric acid salts,

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They are not, however, the only ones which may be employed. Any of the salts of butyric acid which are soluble in water to any degree may be advantageously used provided that they are hydrolyzable in a slightly acid medium. The esters of butyric acid, as contemplated by this invention, include any of the products of the reaction of aliphatic alcohols with butyric acid. A number of buffers may be employed which will give the desired results, e. g., will maintain a pH of between 7 and 8. For example, disodium acid phosphate may be advantageously employed as well as sodium bicarbonate and sodium citrate.

Because of the extreme strength of the butyric acid salts, it is necessary to employ only very minute quantities of them in achieving a desirable butter-like flavor. The percentages are so small that it is desirable to express them in terms of parts per million of salt based upon the total weight of the food product. Hence, it has been found that as little as 1 part per million of butyric acid salts may be appreciably effective in imparting a butter-like flavor to certain types of bakery products, as, for instance, white cakes. It has likewise been found that up to 60 parts per million of butyric acid salts may be employed in other food products without causing a rancid flavor in the food. As a preferred example it has been found that about 7 parts per million of sodium butyrate gives a very desirable butter-like flavor in the pound cake formula disclosed above. It will be observed that the concentration of butyric acid salts is based upon the total weight of the food product. The concentrations have been expressed in this fashion because the manner of introduction is not critical so long as the proper proportion of butyric acid salt to food product is observed. In the pound cake formula the sodium butyrate is added in the proportion of 7 parts per million or 0.0007% by weight of the pound cake formula. Another way of expressing this is to add 0.0096 gram sodium butyrate to the pound cake formula, or 0.128 gram of butter flavor concentrate as shown in a previous example, or 12.8 grams of a butter flavor mix containing filler, a preferred example of which is shown above.

It will be apparent from the above disclosure that the present invention provides a new and novel butter flavor composition which has the desirable characteristics of being essentially non-volatile and which slowly imparts the butter flavor to the food product. The new butter flavor may readily be compounded into a number of compositions which are easily applied to food products.

The invention is hereby claimed as follows:

1. The method of flavoring food products which comprises intimately mixing therewith from 1 to 60 parts per million of sodium butyrate.
2. A butter flavor composition for use in flavoring food products which comprises essential oils, butyric acid esters, higher aliphatic acids, a buffer, and from 3% to 40% by weight of non-volatile butyric acid edible salts which are hydrolyzable in acid medium.
3. The method of flavoring food products which comprises intimately mixing therewith a quantity of a hydrolyzable non-volatile butyric acid edible salt sufficient to impart a butter flavor thereto.
4. Bakery products prepared from acidic doughs and batters containing from 1 to 60 parts per million of sodium butyrate.
5. Food products prepared from acidic doughs

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and batters containing from 1 to 60 parts per million of hydrolyzable non-volatile edible salts of butyric acid.

JACK W. ARMSTRONG.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
2,326,134	Freilich et al.	Aug. 10, 1943

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6

FOREIGN PATENTS

Number	Country	Date
226,537	Great Britain	Dec. 15, 1924
20,902	Australia	Jan. 11, 1935

OTHER REFERENCES

"The Chemical Senses," by Moncrieff-Leonard Hill, Limited, 17 Stratford Place, W. 1, London, 1944, pages 97 and 187.

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Certificate of Correction

Patent No. 2,527,785

October 31, 1950

JACK W. ARMSTRONG

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows:

Column 2, line 53, for "cotnains" read *contains*; column 3, line 27, for "creased" read *greased*; column 4, line 3, for "decree" read *degree*;

and that the said Letters Patent should be read as corrected above, so that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 2nd day of January, A. D. 1951.

[SEAL]

THOMAS F. MURPHY,
Assistant Commissioner of Patents.

United States Patent [19]**Bakal et al.**[11] **Patent Number:** **4,906,490**[45] **Date of Patent:** **Mar. 6, 1990**[54] **METHOD OF PRODUCING BUTTER
FLAVORED GRANULES**[75] **Inventors:** **Abraham I. Bakal**, Parsippany, N.J.;
Marvin E. Eisenstadt, Neponsit, N.Y.[73] **Assignee:** **Cumberland Packing Corp.**,
Brooklyn, N.Y.[21] **Appl. No.:** **302,005**[22] **Filed:** **Jan. 26, 1989****Related U.S. Application Data**[62] **Division of Ser. No. 89,683**, Aug. 26, 1987, Pat. No.
4,844,921.[51] **Int. Cl.⁴** **A23D 3/00; A23L 1/22**[52] **U.S. Cl.** **426/603; 426/609;**
426/613; 426/650; 426/661; 426/804[58] **Field of Search** **426/609, 603, 613, 650,**
426/658, 661, 804, 98[56] **References Cited****U.S. PATENT DOCUMENTS**

3,560,220 2/1971 Bangert 426/609

Primary Examiner—Donald E. Czaja*Assistant Examiner*—Celine T. Callahan*Attorney, Agent, or Firm*—Steinberg & Raskin[57] **ABSTRACT**

A method for producing granules having natural butter flavor is provided, the granules being formed of a carrier such as maltodextrin, a small amount of a fat such as a vegetable oil, and enzyme modified butter oil, with or without, but preferably with a water soluble butter flavor component. The granules may include salt to taste, if desired and may also include an emulsifier. The granules of the invention are very low in calories, have a high intensity butter flavor, have no cholesterol and dissolve instantly upon contact with wet and hot foods to provide the flavor and mouthfeel of butter.

7 Claims, No Drawings

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METHOD OF PRODUCING BUTTER FLAVORED GRANULES

This is a division, of application Ser. No. 089,683, filed on 8/26/87, now U.S. Pat. No. 4,844,921.

BACKGROUND OF THE INVENTION

Butter is a very popular food made of butter fat or cream, milk solids, and natural coloring, and may also contain salt. The fat content of butter is usually about 80%.

Although butter is very high in cholesterol, containing about 220 mg cholesterol/100 g, and very high in calories, more than 700 calories/100 g, butter is nevertheless an extremely popular product. The popularity of butter is mainly due to its unique and characteristic flavor which is the basis for its wide acceptance and utilization as an ingredient in food products. Health experts have recommended the elimination from or reduction of butter in the diet in order to reduce and control the ingestion of cholesterol. This is due to high cholesterol diets having been associated with increased incidence in heart disease.

Physicians have also recommended the elimination or reduction of butter from the diet because of the high caloric content.

The art has recognized the need for a product having the typical and characteristic flavor of butter but without the cholesterol and the high caloric content of butter. U.S. Pat. No. 3,653,921 of Buhler, et al. describes a method for preparing a butter flavor composition consisting of lipolyzed butter oil. The product of this patent provides a highly effective substitute for the flavor of butter. However, the product is best used by first mixing with hot water prior to use.

In U.S. Pat. No. 4,414,229, Bakal, et al. describe a process for the preparation of a spread having natural butter flavor. The butter flavor spread of this patent provides highly effective butter flavor in the form of a spread and is substantially free of cholesterol but does provide a higher caloric content than does the butter flavor composition of U.S. Pat. No. 3,653,921.

SUMMARY OF THE INVENTION

It is accordingly a primary object of the present invention to provide a composition which can easily be used without first being mixed with water and which provides both natural butter flavor and the mouthfeel of butter without the high cholesterol and high caloric content of butter.

It is yet another object of the present invention to provide butter flavored granules which can be simply sprinkled on hot, moist foods to provide natural butter flavor without cholesterol and with very little caloric content.

It is yet a further object of the present invention to provide a method of producing the butter flavored granules.

Other objects and advantages of the present invention will be apparent from a further reading of the specification and of the appended claims.

With the above and other objects in view, the present invention mainly comprises a granulated product formed of a small amount of fat, maltodextrin having a low DE (dextrose equivalent), the DE being less than 5, a butter flavor component consisting at least of an oil soluble component and preferably also including a

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water soluble component, and an inert carrier which may be maltodextrin of a higher DE. The product may also include salt to taste.

In accordance with a preferred embodiment of the invention, the amount of fat is between 1 and 20% by weight of the composition, preferably 5-20% by weight. The fat is most preferably a vegetable oil.

The amount of salt is preferably between about 1-10% by weight.

The amount of low DE maltodextrin is preferably between about 1-10% by weight, the DE thereof being preferably less than 5. Most preferably this maltodextrin is derived from potato.

The butter flavor component, which as indicated above consists at least of an oil soluble component and preferably also includes a water soluble component, is preferably present in an amount of about 0.05-10% by weight, most preferably between about 1-5% by weight. All percentages by weight are of the final product on a dry solids basis.

The oil soluble component of the butter flavor component may be an enzyme modified butter oil (EMBO) or lipolyzed butter oil (LBO).

EMBO or LBO is obtained by incubating either milk fat, derived directly from whole milk, or butter oil derived from butter with a lipase (esterase) enzyme as described, for example, in U.S. Pat. No. 2,794,743. During the incubation period the enzyme system catalytically releases fatty acids from the butter fat and results in certain end products. Specific action of the lipase system releases volatile, flavorful, fatty acids including butyric, caproic, caprylic and capric acids in much greater molar concentrations than, but together with, long chain fatty acids. To control the flavor development in the finished product, the system is heated to completely destroy the enzyme activity and to reduce the bacterial counts to very low levels.

The water soluble component consists of distillates from butter or cultured milk. This product, also known as starter distillate, is the mixture of flavor components distilled from butter or cultured milk. It contains the flavor compounds which are volatile with water at 212° F. While the major component of starter distillate is diacetyl, the starter distillate as a whole, however, gives a flavor which is much more pleasant than that of synthetic diacetyl because of the presence of other flavor substances produced by the bacteria used in culturing the milk. Starter distillate is obtainable commercially as "starter distillate".

The water soluble butter flavor component is used in the composition of the present invention in an amount of up to 1% by weight of the final product, and preferably in an amount of 0.05-0.5% of the final product on the dry solids basis.

The above mentioned components are mixed with an inert carrier such as dextrins, whey solids, corn syrup solids and the like. The most preferred inert carrier is maltodextrin, namely maltodextrins with a DE of between 10 and 20.

The preferred ranges of components of the compositions of the present invention are set forth below:

	Percent By Weight
Low DE potato maltodextrin (less than 5 DE)	1-10; pref. 2-8
Vegetable oil	1-20; pref. 5-10
Salt	0-10; pref. 1-3

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-continued

	Percent By Weight
EMBO	0.5-10; pref. 1-5
Water soluble butter flavor component (starter distillate)	0.0-1.0; pref. 0.05-0.5
Emulsifier (lecithin)	0-1.0; pref. 0.01-0.05
Maltodextrin (10 DE-20 DE)	q.s. 100%

The preferred process for making the product of the invention consists in first preparing a 50-60% solids emulsion, heating the emulsion to between about 120°-160° F., and passing the emulsion through a homogenizer to form a stable emulsion. This emulsion is then conveyed to a spray tower equipped with pressure nozzles and with the provision for the introduction of an inert gas such as nitrogen or carbon dioxide (preferably carbon dioxide). The emulsion is then sprayed by means of the inert gas at an exit air temperature at the spray tower of preferably about 210° F. and utilizing a carbon dioxide pressure of 15 psig.

The resulting dry product has a bulk density of between 20 and 35 g/100 cc and preferably between 22 and 30 g/100 cc. The final product exhibits the following characteristics:

1. It has only 4 calories/gram yet has the flavor intensity of about 10 g of butter, for over 94% savings in calories.
2. It has no cholesterol.
3. It has the natural flavor of butter.
4. It dissolves instantly upon contact with wet and hot foods, thus providing not only the flavor but also the mouthfeel of butter.
5. It has an extended shelf-life and is extremely stable to oxidation.

DESCRIPTION OF PREFERRED EMBODIMENTS

The following examples are given to further illustrate the present invention. The scope of the invention is not, however, meant to be limited to the specific details of the examples.

EXAMPLE 1

A mixture of 5% (all percentages are by weight) of maltodextrin from potato having a DE of 3, 5% vegetable oil, 2% salt, 4% EMBO, 1% starter distillate, 0.5% lecithin and 82.5% maltodextrin having a DE of 10 is emulsified with water of equal amount and the emulsion is heated to a temperature of about 140° F. The emulsion is passed through a homogenizer to form a stable emulsion which is then conveyed to a spray tower equipped with pressure nozzles. The resulting emulsion is spray dried under a carbon dioxide pressure of 15 psig at a temperature of about 210° F.

The resulting dry product has a bulk density of about 25 g/cc. The product has a caloric content of about 4 calories per gram, each gram having the flavor intensity of about 10 g of butter. The butter flavor is natural butter flavor and all components of the granular product are natural.

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The granules may be sprinkled on a hot, wet food such as cooked string beans, cooked potatoes, etc. to provide both the flavor and mouthfeel of butter.

The product has a long shelf-life. The product is extremely stable to oxidation.

EXAMPLE 2

Example 1 is repeated, however utilizing the components in the following percentages: 4% maltodextrin DE 1, 6% vegetable oil, 1% salt, 3% EMBO, 0.5% starter distillate, 0.5% lecithin, and 85% maltodextrin 10 DE.

The resulting product has substantially the same characteristics as the product of Example 1.

While the invention has been illustrated with respect to particular compositions, it is apparent that various modifications of the invention can be made without departing from the spirit or scope thereof.

What is claimed is:

1. Method of producing butter flavored granules having a natural butter flavor and the mouthfeel of butter without providing the cholesterol and calories of butter, which comprises forming a 50-60% solids emulsion of a natural butter flavor component consisting essentially of an oil soluble component formed of an enzyme modified butter oil or lipolyzed butter oil and being present in an amount of about 0.05-10% by weight, a fat in an amount of about 1-20% by weight, and maltodextrin having a low dextrose equivalent of less than 5, in an amount of about 1-10% by weight, all distributed in a balance of an inert carrier, heating the emulsion to between about 120°-160° F., homogenizing the emulsion and spray drying the formed emulsion under pressure of an inert gas and at a temperature of about 210° F.

2. Method according to claim 1 wherein said inert carrier is a maltodextrin.

3. Method according to claim 1 wherein the emulsion includes an emulsifier.

4. Method according to claim 1 wherein the emulsion includes salt in an amount of up to about 10% by weight.

5. Method of producing butter flavored granules having a natural butter flavor and the mouthfeel of butter without providing the cholesterol and calories of butter, which comprises forming a 50-60% solids emulsion of a natural butter flavor component consisting essentially of an oil soluble component formed of an enzyme modified butter oil or lipolyzed butter oil and being present in an amount of about 0.05-10% by weight, a fat in an amount of about 1-20% by weight, and maltodextrin having a low dextrose equivalent of less than 5, in an amount of about 1-10% by weight, all distributed in a balance of an inert carrier selected from the group consisting of dextrans, maltodextrins, whey solids, and corn syrup solids, heating the emulsion to between about 120°-160° F., homogenizing the emulsion and spray drying the formed emulsion under pressure of an inert gas and at a temperature of about 210° F.

6. Method according to claim 5 wherein the emulsion includes an emulsifier in an amount to 1% by weight.

7. Method according to claim 5 wherein said butter flavor component includes starter distillate in an amount up to 1% by weight.

* * * * *

PCT

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特許協力条約に基づいて公開された国際出願

(51) 国際特許分類 ⁴ A23D 3/00, 3/02	A1	(11) 国際公開番号 WO 87/07477 (43) 国際公開日 1987年12月17日 (17.12.87)
(21) 国際出願番号 PCT/JP86/00295 (22) 国際出願日 1986年6月13日 (13. 06. 86) (71) 出願人 (米国を除くすべての指定国について) 麒麟麦酒株式会社 (KIRIN BEER KABUSHIKI KAISHA) (JP/JP) 〒150 東京都渋谷区神宮前六丁目26番1号 Tokyo, (JP) (72) 発明者: および (75) 発明者/出願人 (米国についてのみ) 谷村修也 (TANIMURA, Syuya) (JP/JP) 深沢睦一郎 (FUKAZAWA, Koichiro) (JP/JP) 〒150 東京都渋谷区神宮前六丁目26番1号 麒麟麦酒株式会社内 Tokyo, (JP) 石野克彦 (ISHINO, Katsuhiko) (JP/JP) 小野田大作 (ONODA, Daisaku) (JP/JP) 〒100 東京都千代田区丸の内二丁目4番1号 小岩井乳業株式会社内 Tokyo, (JP) (74) 代理人 弁護士 佐藤一雄, 外 (SATO, Kazuo et al.) 〒100 東京都千代田区丸の内三丁目2番3号富士ビル323号 佐藤特許法律事務所 Tokyo, (JP)		(81) 指定国 AT (欧州特許), BE (欧州特許), CH (欧州特許), DE (欧州特許), DK, FR (欧州特許), GB (欧州特許), IT (欧州特許), NL (欧州特許), NO, SE (欧州特許), U.S. 添付公開書類 国際調査報告書
(54) Title: MARGARINE WITH FERMENTATION TASTE (54) 発明の名称 発酵風味をもつマーガリン (57) Abstract Margarine with a fermentation taste, which contains 0.3 to 5 wt % (in terms of milk solids) (based on the sum of the milk solids, water, and fatty component) of fermented butter milk. This margarine is hardly scorched when used in heat cooking and has a good fermentation taste. (57) 要約 発酵風味賦与剤として発酵バターミルクを、乳固形分に換算して0.3～5重量% (ただし、このパーセントは乳固形分と水分と油脂との合計量を基準とするものである) 含有するマーガリンである。この発明による発酵風味を持つマーガリンは加熱調理に用いても焦げつくことが少なく、また良好な発酵風味を持つ。		

情報としての用途のみ

PCTに基づいて公開される国際出願のパンフレット第1頁にPCT加盟国を同定するために使用されるコード

AT	オーストリア	FR	フランス	MR	モーリタニア
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FI	フィンランド	ML	マリ		

明 細 書

発酵風味をもつマーガリン

技 術 分 野

本発明は、発酵風味をもつマーガリンに関する。さらに具体的には、本発明は、発酵風味賦与剤に主要な特徴を有するマーガリンに関する。

背 景 技 術

バターの代替物として開発されたマーガリンも、最近
は主として栄養上の観点からその消費量が増え、それに
10 従って風味の向上にも配慮がなされるようになっていて、
風味賦与剤として各種のものが提案されあるいは実用化
されている。

そのような風味賦与剤は主として獣乳由来のものであ
って、具体的にはたとえばバターあるいは発酵乳である。

15 マーガリンは本来的にはバターの代替物であるところ
から、単にパンに塗って食するだけではなく、菓子、パ
ン等の製造や炒め物の際にも使用されるべきものである
から、このような加熱調理時に焦げつくことがなくしか
も加熱後にも風味が良いということが望まれている。し
かしながら、従来の風味賦与剤を配合したマーガリンは
20 これらの点において満足すべきものであったとはいい難
い。たとえば、バターを炒め物に使うとき、バターが焦

げやすいことはよく知られているように、バターを配合したマーガリンも焦げやすいという問題が避け難く、また発酵乳を配合したものも発酵乳が持つ焦げやすさを免がれることができない。

5 ところで、バターに発酵バターがあり、発酵バターと類似の発酵風味が期待できるという点から風味賦与剤としての発酵乳は興味のあるものである。しかし、発酵乳には上記のような焦げつきやすいという問題があるばかりでなく、マーガリン製造工程の別の問題も存在する。

10 すなわち、発酵乳をマーガリン製造に使用する場合は防腐のために完全殺菌が絶対不可欠であるとされているところ（「マーガリン・ショートニング・ラード」、第222頁、光琳堂昭和54年発行）、発酵乳の製造に一般的に用いられる濃度10%程度の脱脂乳溶液は発酵後

15 に加熱殺菌すると褐変しかつ固形物から分離沈降し、また風味が変質しやすいという点である。なお、本発明者らの知るところによれば、発酵乳による発酵バター様の風味の賦与は必ずしも効果が十分ではない。

本発明は前記の点に解決を与えることを目的とし、発酵

20 バター様風味賦与剤として発酵バターミルクを使用することによってこの目的を達成しようとするものである。

発 明 の 開 示

本発明による発酵風味をもつマーガリンは、発酵バターミルクを乳固形分として0.3～5重量%（ただし、

このものは乳固形分と水分と油脂との合計量を基準とするものである)含有すること、を特徴とするものである。

本発明に従って発酵バターミルクを風味賦与剤として使用すれば、発酵乳使用に際して認められた問題点が解決されて、本発明マーガリンには製品マーガリンとしての加熱調理時の焦げやすさ、および製造工程上の変質の問題がない。

そのうえ、発酵バターミルクと発酵乳とは同じく獣乳由来の産物でありかつ同じく乳酸発酵を経たものでありながら、発酵バターミルクを配合したマーガリンの発酵風味は発酵乳配合のものよりもすぐれている(後記実験例参照)。発酵乳と発酵バターミルクとの類似性を考えれば、製品マーガリンに認められるこの発酵風味の差は思いがけなかったことというべきである。

15 発明を実施するための最良の形態

発酵バターミルク

本発明で風味賦与剤として使用する発酵バターミルクは、発酵バター製造の副成物である。

20 発酵バターの製造法は周知であって、従ってたとえば「牛乳・乳製品」(養賢堂、昭和49年発行)を参照することが許されよう。本発明との関係でいえば、発酵バターの製造は、原乳を脱脂乳と乳脂肪分すなわちクリームとに分離し、クリームを乳酸発酵に付し、得られる発酵クリームをチャーニング処理に付してエマルジョンの

転相を生じさせて発酵バター粒子と発酵バターミルクとに分離させ、発酵バター粒子を水洗、加塩、ワーキング等の後処理に付すこととなる方法によって製造されることがふつうである。ここで、クリームの乳酸発酵はクリームを殺菌してから乳酸菌スタータを接種して20～25℃程度で発酵を行なわせることがふつうであり、発酵後は5℃程度の温度でエージングを行うことがふつうである。本発明で使用する発酵バターミルクは、上記の発酵クリームのエマルジョンの転相分離した水相成分である。

このようにして得られる発酵バターミルクは発酵乳と異なって高温短時間（H T S T）殺菌を行なっても沈降を生じにくい利点があり、発酵バターミルクには乳酸発酵によって乳脂肪が一部転換して生じるバター様香味物質と共に、乳糖等より乳酸菌によって生成して発酵風味を特徴づけるダイアセチル、アセトアルデヒド等の香氣成分が含まれているので、これをマーガリンに配合したときに発酵乳の配合では実現し難い発酵風味をもたらすことができることは前記したところである。

上記のようにして発酵バター製造時に副成する発酵バターミルクは、乳固形分濃度7～8重量%程度の水溶液として得られるのがふつうである。本発明では、発酵バターミルクをこの濃度のままでマーガリンに配合しても、濃縮（たとえば真空濃縮、膜濃縮、等による）して3倍

程度の濃度にして配合しても、あるいは濃縮後、これを上記濃度に希釈して配合してもよい。

発酵バターミルクの含量は、マーガリンの油脂と乳固形分と水分との合計重量を基準として、乳固形分が0.3〜5%、好ましくは1〜2%、である。これらの範囲は発酵風味を賦与することができると共に油中水型エマルジョン構造のマーガリンの主として水相中に発酵バターミルクが安定に存在しうるように定められたものである。

マーガリンの製造

10 マーガリンの製造法は周知であり、本発明による発酵風味を持つマーガリンもマーガリンの水相成分の少なくとも一部として発酵バターミルクを使用するという点を除けばこの周知の方法に従って製造することができる。

15 マーガリンの製造法としては、たとえば、前掲書を参照することができる。

実験例

実験例 1 (本発明)

20 殺菌クリーム(乳脂肪量45%)に乳酸菌スターターを接種し、発酵後、5℃に冷却してエージングする。本クリームをチャーンによりチャーニングして得た発酵バターミルクをプレート式殺菌機により、HTST殺菌(高温短時間)して、殺菌バターミルクを得た。本品は、乳蛋白質の分離・沈降がほとんどなくかつ褐変もないうえ、豊潤な発酵香味を有していた。

次にマーガリンのベースとなる硬化油を配合した植物油脂 8 2 部に対して、乳化剤（グリセリン脂肪酸エステル）0 . 2 部を加え、先の殺菌バターミルク 1 7 部を加えて攪拌しながら乳化させ、殺菌処理後、かきとり式熱交換機で急冷捏和して、発酵マーガリンをえた。得られた発酵マーガリンは、発酵風味を充分有していた。このマーガリンの乳固形分含量は 1 . 3 重量 % であった。

実験例 2（従来例）

先の配合に対して殺菌バターミルクの代りに 1 0 % 脱脂乳溶液に実験例 1 と同じ乳酸菌スターターを接種し、2 0 °C にて 1 5 時間発酵後、実験例 1 と同様に殺菌した。殺菌によって乳蛋白の分離・沈降ははなはだしく、褐変臭がきついものであった。実験例 1 と同様な油脂ベースに対して、殺菌発酵乳 1 7 部を加えて同様なマーガリンを製造した。えられたマーガリンは、酸味及びダイアセチル臭は有していたが、褐変臭を感じ豊潤な発酵風味は全く感じられなかった。

実験例 3（本発明）

実験例 1 において、殺菌バターミルク 1 7 部の代りに殺菌バターミルク 1 2 部と水 5 部を加えて、同様にマーガリンを製造した。実験例 1 同様の発酵風味を持つマーガリンが得られた。このマーガリンの乳固形分含量は 0 . 9 重量 % であった。

実験例 4（従来例）

実験例 1 において殺菌バターミルクの代りに脱脂乳
1/7 部を加えて同様にマーガリンを製造した。発酵風味
は全く感じられなかった。

参考例 1 (グリーンアスパラガスのマーガリン炒め)

5 新鮮なグリーンアスパラガスを市販 A マーガリン及び
実験例 1 のマーガリンで炒めて比較試食した。結果は、
下記の通りであった。

市販 A 試料：加熱した時すぐ褐変し、また焦げやすい。

油っぽいが、マーガリン風味あり。

10 実験例 1 の試料：ほとんど焦げず、また褐変臭はない。

ややあっさりした発酵風味あり。

参考例 2 (スポンジケーキ (共立て法))

(1) 配合：全卵 150g、グラニュー糖 80g、小麦
粉 80g、マーガリン 40g、計 350g (加熱はオー
ブン、180℃ × 35 分間)

(2) 上記配合により市販 A マーガリン、実験例 1 およ
び 3 のマーガリンでスポンジケーキを試作し、試食した。
結果は、下記の通りであった。

マーガリンの種類：評価

20 市販 A : においがうすい。淡白すぎる。少し甘い感
じがする。

実験例 1 : こくのある風味。

実験例 3 : こくのある風味。ややパサつく。

参考例 3 (パンぬり)

実験例 1、3、4 のマーガリンを焼いた食パンにつけて試食評価した。

マーガリンの種類：評価

実験例 1：濃厚感あり、発酵風味すなお。

5 実験例 3：発酵風味あり。

実験例 4：マイルドだが味気ない。くせのない風味。

実験例 5（本発明）

実験例 3 において、殺菌バターミルク 1 2 部の代りに、3 倍濃縮バターミルク（真空濃縮法による）を 4 部加え、
10 水 1 3 部を足して、同様にマーガリンを製造した。なお、本濃縮バターミルクは、実験例 1 に記したようにストレー
ト状態のバターミルクを H T S T 殺菌したのち、真空濃縮釜で 3 倍まで 5 0 ° C にてパッチ濃縮してえたもので
あり、肉眼的には凝縮・凝固・分離は全く生じていなかった。
15 った。実験例 1 と同様の発酵風味をもつマーガリンが得られた。このマーガリンの乳固形分含量は 0 . 9 重量 % であつた。

参考例 4（パンにぬる）

実験例 3 および 5 のマーガリンについて風味・組織の
20 検討を行ったが、差異はなかった。

実験例 6（本発明）

実験例 1 において 3 倍濃縮バターミルク（真空濃縮法による）を 2 0 部加え、植物性油脂を 7 9 部とし、その他は同様にマーガリンを製造した。やや可塑性の強いマ

ーガリンとなったが、発酵風味は充分すぎる程度まで有していた。このマーガリンの乳固形分含量は4.7重量%であった。

参考例 5 (グリーンアスパラガスのマーガリン炒め)

- 5 実験例 6 の試料で炒めたところ、やや焦げたが、これは蛋白分の多さによるものと推定される。こげは市販 A 試料ほどではなかった。

/ 0

請 求 の 範 囲

1. 発酵バターミルクを乳固形分として0.3～5重量%（ただし、この%は乳固形分と水分と油脂との合計量を基準とするものである）含有することを特徴とする、
- 5 発酵風味をもつマーガリン。

INTERNATIONAL SEARCH REPORT

International Application No.

PCT/JP86/00295

I. CLASSIFICATION OF SUBJECT MATTER (if several classification symbols apply, indicate all) ¹		
According to International Patent Classification (IPC) or to both National Classification and IPC		
Int.Cl ⁴ A23D3/00, 3/02		
II. FIELDS SEARCHED		
Minimum Documentation Searched ⁴		
Classification System	Classification Symbols	
IPC	A23D3/00, 3/02, 5/00, A23C17/02	
Documentation Searched other than Minimum Documentation to the Extent that such Documents are Included in the Fields Searched ⁴		
III. DOCUMENTS CONSIDERED TO BE RELEVANT ¹⁴		
Category ¹	Citation of Document, ¹⁶ with indication, where appropriate, of the relevant passages ¹⁷	Relevant to Claim No. ¹⁸
X	JP, A, 50-29775 (Musierkcentralen Economics Fellenning) 25 March 1975 (25. 03. 75) & US, A, 3922376 & US, A, 4000332 & DE, B, 2360911 & FR, B, 2210351	1
X	JP, A, 58-501893 (Alpen Dilley Foods Proprietary Ltd.) 10 November 1983 (10. 11. 83) & WO, A, 83/01728 & US, A, 4551346 & EP, A, 93124	1
A	A.J.C. Andersen et al "MARGARINE" second revised edition (1965) Pergamonpress (England) P.118-119	1
¹ Special categories of cited documents: ¹⁴ "A" document defining the general state of the art which is not considered to be of particular relevance "E" earlier document but published on or after the international filing date "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) "O" document referring to an oral disclosure, use, exhibition or other means "P" document published prior to the international filing date but later than the priority date claimed "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention "X" document of particular relevance: the claimed invention cannot be considered novel or cannot be considered to involve an inventive step "Y" document of particular relevance: the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art "G" document member of the same patent family		
IV. CERTIFICATION		
Date of the Actual Completion of the International Search ²		Date of Mailing of this International Search Report ²
August 5, 1986 (05. 08. 86)		August 18, 1986 (18. 08. 86)
International Searching Authority ¹		Signature of Authorized Officer ²⁰
Japanese Patent Office		

I. 発明の属する分野の分類		
国際特許分類 (IPC) Int. Cl. A23D3/00, 3/02		
II. 国際調査を行った分野		
調査を行った最小限資料		
分類体系	分類記号	
IPC	A23D3/00, 3/02, 5/00, A23C17/02	
最小限資料以外の資料で調査を行ったもの		
III. 関連する技術に関する文献		
引用文献の カテゴリー*	引用文献名 及び一部の箇所が関連するときは、その関連する箇所の表示	請求の範囲の番号
X	JP, A, 50-29775 (ムジエルクセントラレン・ エコノミクス・フエレニング) 25. 3月. 1975 (25. 03. 75) & US, A, 3922376 & US, A, 4000332 & DE, B, 2360911 & FR, B, 2210351	1
X	JP, A, 58-501893 (アルベン・デイリイ・フー ズ・プロプライエタリイ・リミテッド) 10. 11月. 1983 (10. 11. 83) & WO, A, 83/01728 & US, A, 4551346 & EP, A, 93124	1
A	A.J.C. Andersen et al "MARGARINE" second revised edition (1965) Pergamonpress (英) P. 118-119	1
※引用文献のカテゴリー 「A」 特に関連のある文献ではなく、一般的技術水準を示すもの 「E」 先行文献ではあるが、国際出願日以後に公表されたもの 「L」 優先権主張に疑義を提起する文献又は他の文献の発行日 若しくは他の特別な理由を確立するために引用する文献 (理由を付す) 「O」 口頭による開示、使用、展示等に言及する文献 「P」 国際出願日前で、かつ優先権の主張の基礎となる出願の日 の後に公表された文献 「T」 国際出願日又は優先日の後に公表された文献であって出願 と矛盾するものではなく、発明の原理又は理論の理解のた めに引用するもの 「X」 特に関連のある文献であって、当該文献のみで発明の新規 性又は進歩性がないと考えられるもの 「Y」 特に関連のある文献であって、当該文献と他の1以上の文 献との、当業者にとって自明である組合せによって進歩性 がないと考えられるもの 「&」 同一パテントファミリーの文献		
IV. 証 証		
国際調査を完了した日 05. 08. 86	国際調査報告の発送日 18.08.86	
国際調査機関 日本国特許庁 (ISA/JP)	権限のある職員 特許庁審査官 平 田 和 男	4 B 7 8 2 3

United States Patent [19]

Bakal et al.

[11] **4,414,229**[45] **Nov. 8, 1983**[54] **MARGARINE AND THE LIKE SPREAD
WITH NATURAL BUTTER FLAVOR**[75] Inventors: **Abraham I. Bakal**, Parsippany, N.J.;
Allen C. Buhler, Racine, Wis.[73] Assignee: **Cumberland Packing Corp.**,
Brooklyn, N.Y.[21] Appl. No.: **323,548**[22] Filed: **Nov. 23, 1981**[51] Int. Cl.³ **A23D 3/00; A23L 1/23**[52] U.S. Cl. **426/98; 426/603;**
426/613; 426/650[58] Field of Search **426/63, 98, 533, 35,**
426/603, 613, 580, 650, 586[56] **References Cited****U.S. PATENT DOCUMENTS**

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Primary Examiner—Robert A. Yoncoskie
Attorney, Agent, or Firm—Steinberg & Raskin[57] **ABSTRACT**

Margarines or the like spreads are provided with natural butter flavor by incorporating therein oil soluble lipolyzed cream or butter oil (obtained by treating fresh cream with lipase enzymes) and water soluble starter distillate (which is a mixture of flavor compounds distilled from cultured reconstituted skim milk) in an amount sufficient to impart the butter flavor to the spread. The proportion of water soluble component to oil soluble component should be between 1 part water soluble component per each 2–20 parts oil soluble component. It is necessary for the water phase to be distributed throughout the oil phase. This can be accomplished either by mixing the oil and water phases with a carrier such as maltodextrin and drying, which causes the phases to become encapsulated, or by emulsifying the two phases by means of an emulsifying agent.

11 Claims, No Drawings

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MARGARINE AND THE LIKE SPREAD WITH NATURAL BUTTER FLAVOR

BACKGROUND OF THE INVENTION

Spreadable emulsions which are used as substitutes for butter have generally become classified according to their oil content. Margarine contains not less than 80% fat as set forth in the standard of identity of the Federal Food, Drug and Cosmetic Act, 21 USC 166.110. The margarine is produced by admixing of two phases, oil and aqueous. The oil blending may be done by the refiner of the margarine manufacturer and color may be added, generally carotene to the oil, as well as vitamins and emulsifiers. About 16-18% skim milk or water, plus flavorants, salt and preservatives are added to the liquid phase. Diet margarine must have 50% or less calories than conventional margarine, and whereas whey or milk powder may be used in margarine for flavor purposes, the same cannot be used in diet margarine because these ingredients have the effect of breaking the emulsion. The diet margarines contain about 60% of water and between about 35-30% of oil.

The so-called "spreads" are between margarine and diet margarine in oil content and thus contain between about 40 and 80% of oil.

The term "margarine or the like spreads" used throughout the specification and claims of this case is meant to include all of the above butter substitute spreads, namely margarine, diet margarines and "spreads" as well as butter itself since the composition of the invention can even be added to butter to intensify the butter flavor.

Margarine itself, while it can be made so as to be substantially cholesterol-free, nevertheless contains substantially the same number of calories as does butter. Also, margarine has never been able to achieve the same desired flavor as natural butter.

The diet margarines, and the "spreads" which are generally sold in plastic tubs, while having less calories than margarine, are even less desirable than margarine from the standpoint of taste and mouth feel.

All of the margarine and the like spreads on the market utilize the artificial ingredient diacetyl to attempt to impart a buttery flavor to the spread. Some of the margarine products utilize a blend of diacetyl with butyl aldehydes, butyl alcohols and butyric acid.

Starter distillate was experimented with for the purpose of imparting flavor to margarine but was found when used alone for this purpose to be too fragile with loss of flavor occurring very shortly after the product was packaged.

Likewise, lipolyzed cream was tried as a flavorant for margarine but was found when used alone for this purpose to be unsatisfactory because the product was not stable and would become rancid within thirty days. In addition, the flavor was too inconsistent from batch to batch and there was considerable difficulty in maintaining a good emulsion with these flavorants.

SUMMARY OF THE INVENTION

It is accordingly a primary object of the present invention to provide margarine or the like spreads with natural butter flavor.

It is another object of the present invention to provide a composition of water soluble distillate and oil soluble lipolyzed cream which can be added to any

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margarine or the like spread to impart natural butter flavor thereto.

It is yet another object of the present invention to provide a method of incorporating the composition of the invention into margarines or the like spreads for the purpose of imparting natural butter flavor thereto. An additional object is to impart such flavor which is maintained in a stable water-in-oil emulsion.

It is still a further object of the present invention to provide for a means of giving natural butter flavor to any spread, and in fact to even intensify the natural butter flavor of butter itself.

With the above and other objects in view, the present invention mainly comprises as a natural butter flavorant for margarines or the like spreads, a mixture of water soluble starter distillate with oil soluble lipolyzed creams or lipolyzed butter oils in a ratio of 2-20 parts of the oil soluble component per each part of the water soluble component, and preferably 5-10 parts of the oil soluble component per each part of the water soluble component.

The use of more than 20 parts of the oil soluble component gives the composition a flavor which is to cheesy. On the other hand, the use of less than 2 parts of the oil soluble component results in a product having an imbalance of flavor notes and not a true natural butter taste.

The margarine or the like spread of the present invention possessing natural butter flavor comprises margarine or the like spread with the addition thereto of 0.05-2% by weight of the above flavorant. While this proportion is not critical it has been found that an addition of less than 0.05% of the flavorant is too weak to accomplish the desired result. On the other hand, while more than 2% of the flavorant can be used, any additional amount is unnecessary and therefore should be avoided from the standpoint of economy.

If desired, the margarine or the like spread can also include cellulose fiber in an amount of up to 3% of the water content, the cellulose fibers having a particle size preferably in the range of not greater than 400 microns, and more preferably in the range of 50-200 microns. A particle size of more than 400 microns gives the spread a texture which is too gritty or stringy.

The amount of cellulose fiber depends to a large extent on the amount of water in the spread. Spreads having about 15% of water require no cellulose fibers or at most a very small amount, while spreads having a high water content of up to 60% require higher cellulose fiber content in a range of about 0.05-3% of the water content. If less than 0.05% cellulose fiber is used in such spread, the amount of fiber is not sufficient to provide the desired texture for good spreadability. On the other hand, an amount of more than 3% makes the product too stiff and therefore loses spreadability. The higher percentage is used for higher water contents. When used at the preferred levels, the cellulose fibers serve as non-caloric moisture binders and improve the texture and mouthfeel of the spread. The cellulose fibers also improve the flavor impact in spreads having a high water content.

In accordance with a preferred embodiment of the present invention, the water soluble starter distillate and oil soluble lipolyzed oils are both spray dried and in this dry form mixed with the aqueous phase from which the water-in oil emulsion of the margarine or the like spread is made. The water soluble coating of the spray dried material envelopes the lipolyzed oil and thus facilitates

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distribution thereof in the aqueous phase so that this method of incorporating the flavoring component of the invention results in uniform, stable emulsions which are not readily produced when the lipolyzed oils or creams are used in a liquid form. The water soluble coating or carrier may be a conventional carrier such as non-fat dry milk, starches, corn syrup solids or maltodextrins. We have found that starch hydrolysates having a lower dextrose equivalent are particularly suitable since they are readily water soluble and not too hygroscopic. When the DE is 20 or less, such carriers are referred to as maltodextrins.

The lipolyzed oils or creams are natural dairy flavors and can be obtained by incubating either milkfat, derived directly from whole milk, or butter oil derived from butter with a lipase (esterase) enzyme as described, for example, in U.S. Pat. No. 2,794,743. During the incubation period, the enzyme system catalytically releases fatty acids from the butter fat and results in certain end products. Specific action of the lipase system releases volatile, flavorful, fatty acids including butyric, caproic, and caprylic capric acids, in much greater molar concentrations than, but together with, long chain fatty acids. To control the flavor development in the finished product, the system is heated to completely destroy the enzyme activity and to reduce the bacterial counts to very low levels. Lipolyzed cream or milk fat can be likewise produced in the manner described in U.S. Pat. No. 3,469,993, i.e., by first treating with lactic acid-producing bacteria to produce therein lactic acid, after which the lactic acid acidified milk fat medium is treated with lipase enzymes in the conventional manner.

The starter distillate, which is the water soluble component of the flavorant of the present invention is the mixture of flavor compounds distilled from cultured reconstituted skim milk. It contains the flavor compounds which are volatile with water at 212° F. While the major component of starter distillate is diacetyl, the starter distillate as a whole, however, gives a flavor which is much more pleasant than that of synthetic diacetyl because of the presence of other flavor substances produced by the bacteria used in culturing the milk. Starter distillate is obtainable commercially as "starter distillate."

The use of the flavorant of the present invention particularly when incorporated into the margarine or the like spread by mixing the spray dried flavorant with the aqueous phase of what becomes the margarine or the like spread, in an amount of 0.05-2% of the spread, results in a margarine or the like spread with a truly natural butter flavor.

In order to achieve a natural butter flavor, the spread must have a butter flavor which is free of artificial and off-flavor notes. The flavor must be homogeneously distributed within the emulsion and yet must be available to the taste buds during consumption. Still further, the flavor must also be stable upon storage of this spread under refrigeration for periods of up to six months and must be stable upon heating and during processing.

In contrast to known attempts to achieve natural butter flavor in margarine or the like spreads, such attempts even going to the extent of mixing natural butter with margarine, which is both expensive and cannot provide for cholesterol free products, the compositions of the present invention provide truly natural butter flavor from natural sources. The flavor system is stable under refrigeration for at least six months in the presence of preservatives and anti oxidants which are

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commonly used in margarine and the like spreads. Still further, the flavor system of the present invention is adapted for incorporation into diet margarines of high water content.

The method of the present invention comprises the mixing of the water soluble starter distillate with the oil soluble lipolyzed oil, in a ratio of 1 part of water soluble component to 2-20 parts of oil soluble component (preferably 5-10 parts), together with other additives, such as, water, maltodextrin or other carriers and color if desired. If the flavor base is to be used with low calorie spreads of high water content, then cellulose fiber of a particle size of 50-400 microns is added in an amount such that the cellulose content in the final product is between 0.5-3% of the water content of the final spread. The mixture is then dried. Drying can be effected by freeze drying, foam-mat drying, rotary drying, tray drying or spray drying. Spray drying is most preferred.

It has been found that the drying step imparts certain benefits to the final product in that certain volatile and undesired flavor notes are eliminated during the drying step. The resulting flavor base becomes shelf stable and does not change upon storage and still further the flavor base can be more easily incorporated into the spread since it can be mixed into the water phase of the spread and thoroughly emulsified therewith before being added to the fat phase.

The water phase can also be distributed through the oil phase by emulsification with any of the common commercial emulsifying agents such as the Tweens, the Spans or lecithin, to form a paste which paste can also be used for the purposes of the present invention.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

The following examples are given to further illustrate the present invention. The scope of the invention is not, however, meant to be limited to the specific details of the examples.

EXAMPLE 1

30 parts of Dariteen L-11 (A commercial lipolyzed cultured cream manufactured by Haarmann & Reimer) were mixed with 3.0 parts starter distillate, 0.2 parts annatto coloring, 0.02 parts turmeric and 66.78 parts maltodextrin. To this mixture about 50 parts of hot water were added and the mixture was thoroughly agitated and homogenized. This mixture yielded a homogeneous emulsion in which the two flavor components, the oil soluble and the water soluble, were uniformly dispersed. This mixture was kept under refrigeration in order to minimize changes in the flavor during storage. However, this flavor system was unstable and had limited storage life.

Because of the lack of drying the above flavor system is unstable, as indicated. However, the flavor system will give a satisfactory flavor provided that it is used fresh.

EXAMPLE 2

To 150 parts of the flavor system described in Example 1, 50 parts of hot water were added. The flavor was then thoroughly mixed and homogenized.

The homogeneous mixture was spray dried in a conventional spray drier.

The dehydrated product contained the functional ingredients, that is the lipolyzed cultured cream and the

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starter distillate, enrobed in the maltodextrin. This flavor system was stable and could be stored for long periods without noticeable change in the flavor.

In this dehydrated system, the ratio of the oil soluble flavor component to the water soluble was 10.0 to 1.0 respectively.

This example describes a preferred flavor system giving excellent flavor notes and providing a stable product which can be used over long periods of time.

EXAMPLE 3

Thirty parts of Dariteen L-11 were mixed with 3.0 parts of starter distillate, 0.2 parts annatto coloring and 0.02 parts turmeric. The mixture was heated to about 150° F. and to it 17 parts of water were added. To this mixture 0.05 of Tween 60 and 0.05 parts of Span 60 (as emulsifiers) were added and the mixture was homogenized to produce a uniform emulsion. This emulsion could be used as the flavor base having about 1.5 times the flavor strength of the flavor base described in Example 2.

EXAMPLE 4

To 295 parts of water, 75 parts of the flavor base described in Example 2, and 30 parts of salt were added and thoroughly mixed. A uniform mix was obtained.

This mixture was combined with 1,600 parts of margarine oil (containing emulsifiers, and preservatives) and then passed through a cool scraped surface heat exchanger in the normal manner margarines are prepared.

The product was poured into tubs to form a soft margarine spread.

The product was subjected to a taste panel and was compared to commercial margarines and lightly salted butter. The panel was asked to rate the flavor of each product on a scale of 0 to 8 where:

0=not butter-like flavor

8=truly butter-like flavor.

The butter was given to the panel as open control and to it a score of 8 was assigned. The panel gave the product made in accordance with this invention an average score of 7.0, while giving the commercial margarine products an average score of 5.5.

EXAMPLE 5

The product prepared in accordance with Example 4 was stored under refrigeration for six months and evaluated.

No changes were noted in flavor, color or stability of the product.

The product still received high scores by the taste panel.

EXAMPLE 6

To 200 parts of the flavor base described in Example 2, 50 parts of microcrystalline cellulose, 50 microns were added and thoroughly mixed.

This mixture was added to 970 parts of water and 30 parts of salt and thoroughly mixed to produce a homogeneous dispersion. To this 750 parts of margarine oil (containing emulsifiers and preservatives) are added, thoroughly mixed to form an emulsion and cooled in a scraped surface heat exchanger in the normal manner for preparing diet margarines.

The product was poured into tubs to form a soft diet margarine spread.

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The product was evaluated and judged superior to commercial diet margarines. Panelists described this product as having a true butter flavor and having desirable mouthfeel. The commercial diet margarines were judged as gummy or slimy and as having a chemical flavor.

This product was judged as acceptable even after four months of refrigerated storage.

EXAMPLE 7

To 150 parts of the flavor base described in Example 2, 40 parts of cellulose (50 micron) and 30 parts of salt were added and thoroughly mixed. This mixture was added to 480 parts of water and thoroughly mixed to form a homogeneous product. This homogeneous emulsion was chilled and added to 1,300 parts of butter (without salt) and whipped in a mixer. Whipping was continued until a uniform product was obtained.

The resulting product was a whipped butter having less than one-third the calories of butter and excellent butter flavor. This product was compared to commercial whipped butter and was judged as having better butter flavor than the commercial whipped butter.

EXAMPLE 8

To 100 parts of the flavor base described in Example 2, and 30 parts of salt, 700 parts of water were added and the mixture was thoroughly blended. This mixture was combined with 1,170 parts of margarine oil (containing emulsifiers and preservatives) and then passed through a cool, scraped surface heat exchanger in the normal manner margarines are prepared.

The product was poured into tubs to form a soft, light spread.

The product was subjected to a taste panel and was compared to commercial light spreads. It was judged superior to the commercial light spread in flavor and mouthfeel. The panel described the flavor as clean, true butter flavor.

This product was judged as acceptable even after four months of refrigerated storage.

EXAMPLE 9

To 1 part of the flavor base mentioned in Example 2, about 0.2 parts of water were added and the mixture was homogenized. This mixture was then added to 98.8 parts of commercial, slightly salted butter and mixed thoroughly to produce a uniform product.

This product was evaluated by a taste panel for flavor quality and was compared with commercial butter.

It was found that this product had approximately double the flavor strength of the commercial butter. The panel described the flavor of the product as clean, true butter flavor with no aftertaste.

This method clearly illustrates the potential of this invention in cost savings and/or caloric savings in various food applications. For example, the product described in this example could replace twice the quantity of butter in a cake. This will represent substantial cost savings, as well as caloric reduction.

Another possibility is to mix this double flavor strength butter with equal quantity of margarine and thus obtain a butter/margarine blend having the flavor of commercial butter at significantly lower cost.

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EXAMPLE 10

To 1.5 parts of the flavor base described in Example 2, 0.3 parts of water were added. This mixture was thoroughly blended and homogenized.

This paste was added to commercial, slightly salted, whipped butter and mixed thoroughly to produce a uniform product.

The product was judged as having strong, clear and true butter flavor. It could be used commercially, for example, as a pancake topping with noticeably improved flavor.

While the invention has been described with particular reference to certain specific embodiments, it is to be understood that various modifications and changes may be made and such modifications are contemplated and are to be considered within the scope of the appended claims.

What is claimed is:

1. Composition for providing natural butter flavor to a butter substitute spread, said composition comprising as a water soluble component starter distillate which is uniformly distributed through lipolyzed cream or lipolyzed butter oil as an oil soluble component in ratio of 2-20 parts of said oil soluble component per each part of said water soluble component.

2. Composition according to claim 1 wherein said oil of soluble component is present in an amount of 5-10 parts for each part of said water soluble component.

3. A butter substitute spread possessing natural butter flavor, said spread having distributed therethrough

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between about 0.05-2% by weight of the composition of claim 2.

4. Spread according to claim 3 and also including cellulose fibers having a particle size not greater than about 400 microns in an amount of up to 3% of the water content of said spread.

5. Spread according to claim 4 and wherein the particle size of said cellulose fibers is between about 50 and 200 microns.

6. Composition according to claim 1 and also including a carrier.

7. Composition according to claim 6 wherein said carrier is selected from the group consisting of non-fat dry milk, starches, corn syrup solids and maltodextrins.

8. Composition according to claim 6 wherein said carrier is maltodextrin.

9. Method of producing the composition of claim 6, which comprises mixing said water soluble component, said oil soluble component and said carrier, and drying the thus formed mixture, thus causing the oil and water soluble components to become encapsulated.

10. Method according to claim 9 wherein the drying is effected by spray drying.

11. Method of producing the spread of claim 3, which comprises drying said water soluble component and said oil soluble component, and mixing the thus dried components with an aqueous phase from which the margarine or the like spread is made, thus distributing said components therein.

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United States Patent [19]

Antenore et al.

[11] 4,447,463

[45] May 8, 1984

[54] PROCESS FOR PRODUCING A BUTTER/MARGARINE BLEND PRODUCT

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[73] Assignee: Land O'Lakes, Inc., Arden Hills, Minn.

[21] Appl. No.: 442,920

[22] Filed: Nov. 19, 1982

[51] Int. Cl.³ A23D 3/02

[52] U.S. Cl. 426/603; 426/604

[58] Field of Search 426/603, 604, 530, 663

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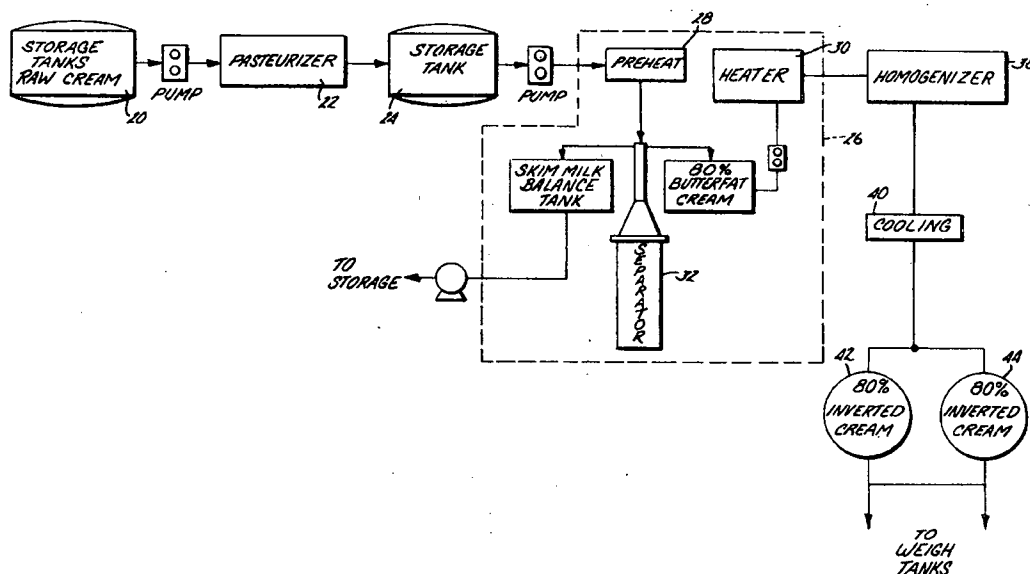
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 Attorney, Agent, or Firm—Kinney & Lange

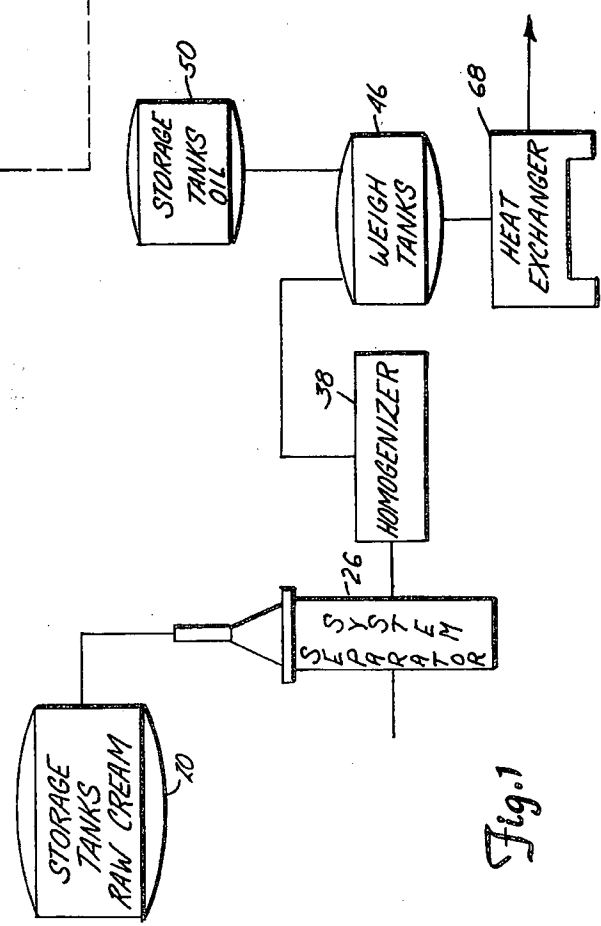
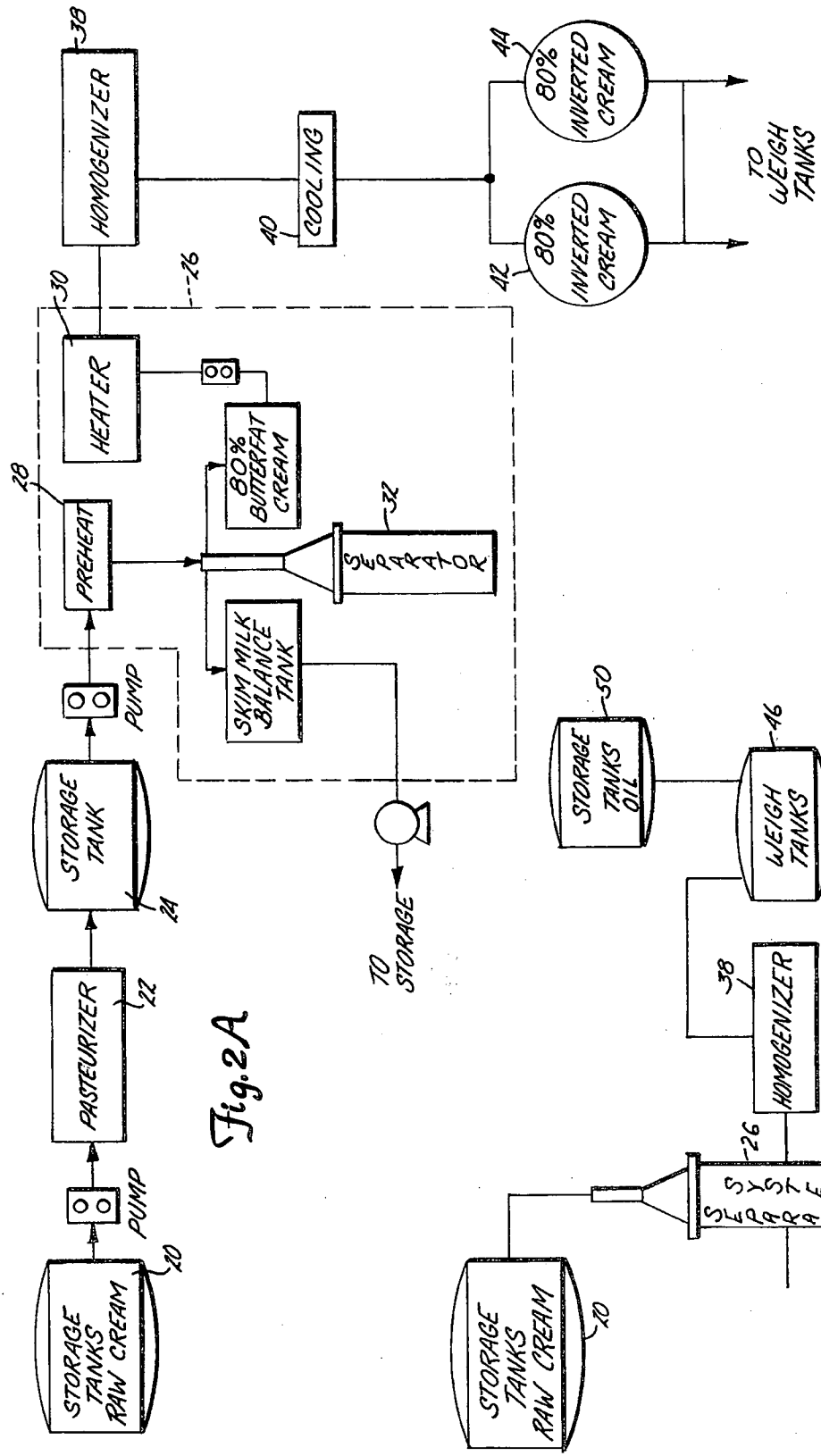
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ABSTRACT

A churn-free process for producing a spreadable dairy product includes the steps of: providing a cream having a fat content in the preferred range of approximately 38-42% butterfat; concentrating the cream to increase the fat content to at least 80% butterfat; processing the cream through a homogenizer such that the cream is inverted from an oil-in-water emulsion to a water-in-oil emulsion; adding a liquid vegetable oil to the water-in-oil emulsion; and cooling the vegetable oil/cream mixture sufficiently, preferably through a swept-surface heat exchanger, such that a viscous spread-like mixture is produced.

8 Claims, 3 Drawing Figures





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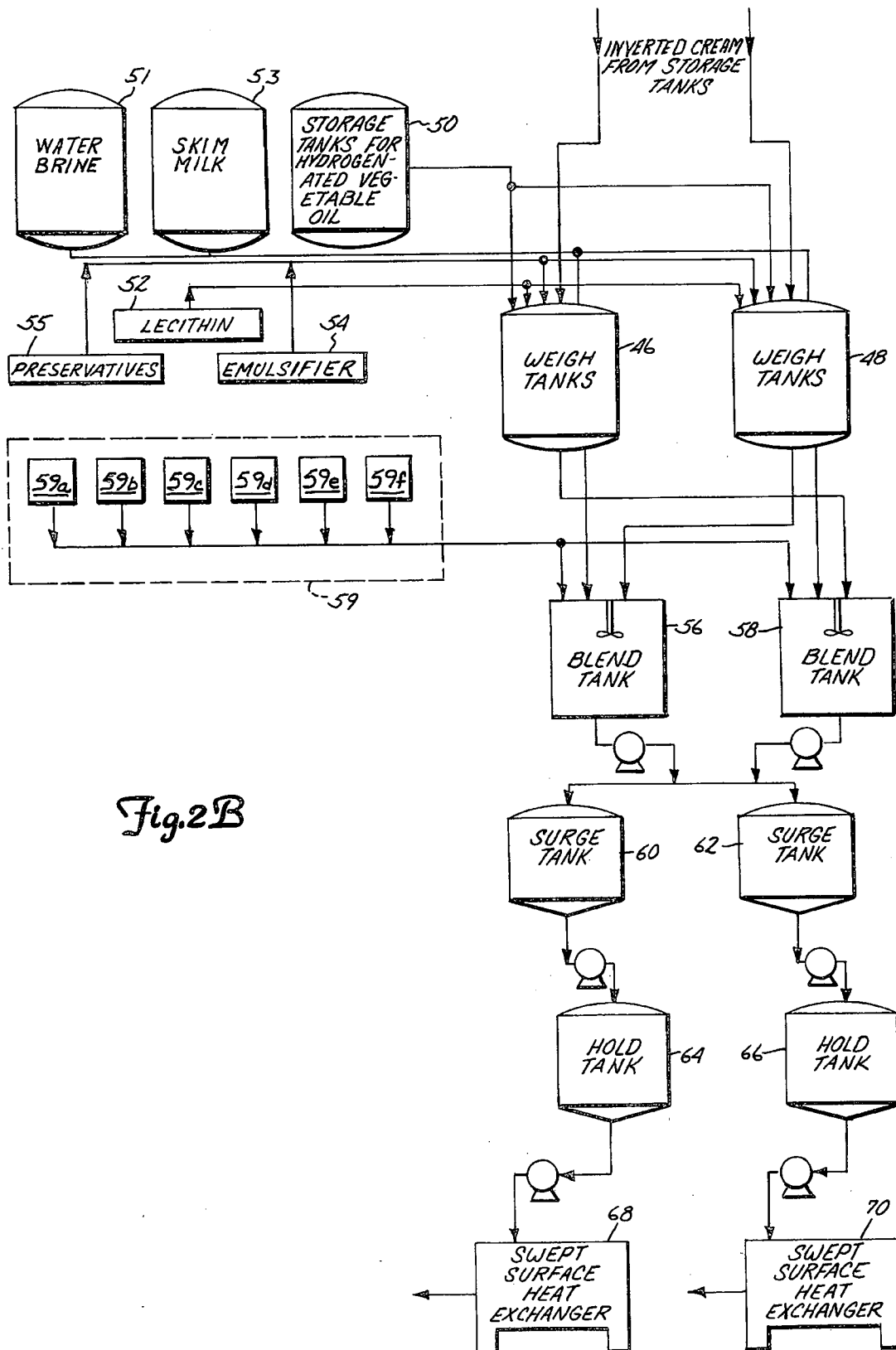


Fig. 2B

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PROCESS FOR PRODUCING A BUTTER/MARGARINE BLEND PRODUCT

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates to processes for producing spreadable dairy products.

2. Description of the Prior Art

The methods of producing butter and butter/margarine blend products are quite varied with some being quite old. One method that is well known in the prior art, is simply taking cream and placing the cream in a churn and churning the cream until butter is formed. Another method is described in the Hobbs U.S. Pat. No. 263,042 issued on Aug. 22, 1882. The Hobbs Patent describes a process wherein a fraction of vegetable oil is subjected to pressure and temperature to make the vegetable oil compatible with an "animal oleo margarine." The "animal oleo margarine" and the vegetable oil are melted and mixed with cream before emulsifying. The mixture is then churned to obtain the "artificial butter" of the Hobbs Patent.

In both methods described above, churning is used to convert an oil-in-water emulsion to a water-in-oil emulsion. In an oil-in-water emulsion, such as dairy cream, the water phase is the continuous phase and the emulsion has properties similar to water. In a water-in-oil emulsion, such as butter, the oil is in the continuous phase and the emulsion exhibits properties similar to oil, such as being greasy.

Other patents disclose further refinements in the production of spreadable dairy products, especially patents directed to the production of butter/margarine blend products. The Lauferty U.S. Pat. Nos. 264,714 and 265,833 issued on Sept. 19, 1882 and Oct. 10, 1882, respectively, the Cochran U.S. Pat. No. 285,878 issued on Oct. 2, 1883, the Libreich U.S. Pat. No. 611,495 issued on Sept. 27, 1898, the Winship et al U.S. Pat. No. 1,028,804 issued on June 4, 1912, the Wall U.S. Pat. No. 1,386,475 issued on Aug. 2, 1921, the Hunziker U.S. Pat. No. 1,527,586 issued on Feb. 24, 1925, the Vahlteich U.S. Pat. No. 2,485,634 issued on Oct. 25, 1949, and the Johansson U.S. Pat. No. 4,209,546 issued on June 24, 1980, describe various processes wherein a cream and vegetable oil are mixed and then churned.

Still other processes described in other patents include homogenizing a milk/vegetable oil mixture by passing the mixture through a homogenizer or an emulsifying machine. In the Ashby U.S. Pat. No. 1,400,341 issued on Dec. 13, 1921, an 80% vegetable oil and 20% milk mixture is passed through an emulsifying machine prior to churning. In the Forman et al U.S. Pat. No. 4,177,293 issued on Dec. 4, 1979, a lowfat content butter spread is produced by starting with cream which can include a vegetable oil, innoculating the mixture and then homogenizing. After homogenization, fermentation is permitted and the mixture is homogenized a second time. The product is then directly packaged.

Still other patents describe processes for making a spreadable dairy product without using a churn. The patents include the Dubuisson U.S. Pat. No. 598,561 issued on Feb. 8, 1898, the Lillard U.S. Pat. No. 859,823 issued July 9, 1907, the Kronenberger U.S. Pat. No. 1,024,009 issued on Apr. 23, 1912, the Zeuthen et al U.S. Pat. No. 1,345,657 issued on July 6, 1920, the Karpinsky et al U.S. Pat. No. 1,644,254 issued on Oct. 4, 1927, the Feremutsch U.S. Pat. No. 2,051,797 issued on Aug. 18,

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1936, the Shafer et al U.S. Pat. No. 2,745,750 issued on May 15, 1956, and the Schaap U.S. Pat. No. 3,386,835 issued on June 4, 1968.

Other patents describe various processes which use a "Votator" paddle-type device for cooling a dairy product to a more viscous form.

The Japikse U.S. Pat. No. 3,425,843, issued on Feb. 4, 1969, describes a process that produces an emulsion for use in a salad dressing. One of the steps in the process consists of rapidly chilling the emulsion within a "Votator".

The Ebskamp U.S. Pat. No. 4,217,372, issued on Aug. 12, 1980, describes a process for improving the structural properties of fats by cooling an aqueous margarine solution through a series of apparatus which have rotating shafts and paddles and cooling zones.

The Pichel U.S. Pat. No. 3,338,720, issued on Aug. 29, 1967, also uses a Votator for making a margarine product by first churning the margarine emulsion and then passing the emulsion through a "Votator" for crystallization.

In addition, several other patents describe processes for producing margarine wherein the margarine is passed initially through a "Votator" and then is homogenized. These patents include the Rourke et al U.S. Pat. No. 2,611,707 issued on Sept. 23, 1952, the Wilson et al U.S. Pat. No. 2,592,224 issued on Apr. 8, 1952, the McGowan et al U.S. Pat. No. 2,797,164 issued on June 25, 1957, and the Gander et al U.S. Pat. No. 3,488,199 issued Jan. 6, 1970.

There are also several continuous processes for producing butter which are of interest and not described in any of the previously-mentioned prior art patents.

One process is known as the "Gold'n Flow" continuous buttermaking system by the Cherry-Burrell Company. Briefly, the Gold'n Flow process starts with cream in a holding tank. From the holding tank, the cream is pumped through a filter to a destabilizing unit. The destabilizing unit whips and partially destabilizes the cream prior to entry into a separator. In the separator, the fat content of the cream is increased to 88% or higher with light and heavy skim milk being removed as a byproduct. After the separator, the cream which is now a fat concentrate is discharged into a second surge tank and into a three-stage vacuum-type pasteurizer. From the pasteurizer, the fat concentrate is pumped into a "composition control unit" wherein the fat concentrate is analyzed for further processing. After the composition control unit, the concentrate flows into a butter chiller which is similar to a "Vogt Freezer". From the chiller, the butter is discharged at a temperature of about 40° F. and directly into a texturizer which allows time for the fat to crystallize and which further works the butter by forcing the butter through a perforated plate at its discharge end. When the butter leaves the texturizer, it is firm enough for printing and wrapping. The Cherry-Burrell process is also mentioned on page 587 of the "Fundamentals of Dairy Chemistry", by Webb, Johnson and Alford (3d ed.) 1980.

Another continuous process produces anhydrous milk fat, also called butter oil, which is approximately 99% butterfat. This continuous process is sold commercially by Carnation Company and briefly includes the following steps. First, the cream is concentrated from 40% to 80% fat content by first increasing the temperature of the fluid cream to 145° F. and pushing the cream into a centrifugal separator wherein the cream is con-

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concentrated to a range of 78-80% fat. Second, the phase of the concentrated cream is reversed from fat in serum to serum in fat. The concentrated cream is pumped into a phase reverser, a machine similar to a homogenizer. By controlling the pressure, the phase reverser breaks the membrane of the fat globules, releasing the fat from its globular state, the processing pressure ranging generally from 1200 to 1400 pounds. The third step is to concentrate the fat concentrate to 98-99% fat. The fourth step includes processing the 98-99% fat content concentrate through a centrifugal oil polisher which further increases the fat concentrate to 99.5%.

Still another continuous process, commonly referred to as the "Creamery Package Process", is mentioned in the "Fundamentals of Dairy Chemistry", by Webb, Johnson and Alford, pp. 587-588 (3d ed.) 1980. The "Creamery Package Process" utilizes homogenization to destabilize re-separated cream to produce butter.

Another process which produces a butter/margarine blend product is the subject of an application entitled, "Process for Making Butter/Margarine Blend" having Ser. No. 339,378 which was filed on Jan. 15, 1982 and is assigned to the same assignee as the present invention. The process includes homogenizing a skim milk/vegetable oil mixture such that the globule size of the vegetable oil is reduced to a size range naturally found in cream. The homogenized skim milk/vegetable oil mixture is then mixed with cream having a 40% butterfat content and the oil/cream mixture is then churned in a conventional continuous butter churn. Although the immediately described process produces a satisfactory butter/margarine blend product, the churning byproduct, buttermilk, contains amounts of vegetable oil. Amounts of vegetable oil in the buttermilk limit the range of use of the buttermilk.

SUMMARY OF THE INVENTION

The present invention includes a continuous process that produces a butter/margarine blend dairy spread and in which the skim milk is free of vegetable oil. The process includes concentrating cream to approximately at least an 80% fat level and then processing the cream through a homogenizer such that a phase inversion of the cream occurs, producing essentially a liquid butter. The liquid butter is then mixed with a vegetable oil at a preferred 40/60 ratio, respectively. The butter/margarine mixture is then pumped into a cooling unit such as a swept-surface heat exchanger wherein the mixture is cooled to a highly viscous form for packaging.

The process of the present invention provides a method that produces a butter/margarine blend dairy spread without the use of a churn. Cream is processed into liquid butter prior to addition of vegetable oil resulting in a skim milk byproduct containing no traces of vegetable oil. After the liquid butter and vegetable oil are mixed, the mixture is simply cooled to a viscous form for packaging.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a simplified flow diagram of the present invention; and
FIGS. 2A and 2B collectively show a detailed flow diagram of the process.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

The butter/margarine blend process of the present invention is illustrated in a simplified flow diagram in

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FIG. 1 and is illustrated in a more detailed flow diagram separated into a first portion and a second portion, as illustrated in FIGS. 2A and 2B. The process produces a butter/margarine blend dairy spread and a nonvegetable oil bearing skim milk byproduct. No churning of the cream is required to produce the butter component of the present invention.

Referring to the simplified flow diagram in FIG. 1, the process provides cream stored in a plurality of storage tanks represented by tank 20. From the storage tank 20, the cream is processed through a separator system 26 on a continuous basis. In the separator system, the cream is concentrated to at least 80% butterfat and skim milk is removed. After the separator system 26, the cream is inverted in a homogenizer 38 to a water-in-oil emulsion. The inverted cream is then mixed with a vegetable oil in a ratio of 40% inverted cream to 60% vegetable oil. The mixture which is then cooled in a swept-surface heat exchanger 68.

The present invention provides a process wherein a butter/margarine blend product is produced on a continuous basis and in which a vegetable oil-free skim milk is produced. Although some of the prior art processes for producing butter are similar, none of these processes employ the mixing of vegetable oil with butter. Previous practice in trying to produce a butter/margarine blend product on a continuous basis resulted in a milk byproduct containing amounts of vegetable oil, limiting the usefulness of the milk byproduct. The present invention produces both a butter/margarine blend and a more useable skim milk product.

Referring now to the more detailed flow diagram in FIGS. 2A and 2B, and specifically to FIG. 2A, cream having a butterfat content in the approximate range of 38-42% is stored in the plurality of storage tanks 20. Preferably, the butterfat content of the cream is approximately 40%. The cream is stored in the storage tanks 20 within a temperature range of approximately 38°-42° F. with a preferred storage temperature of 40° F. It should be understood that all process temperatures mentioned are a mean temperature having at least a range of $\pm 4^\circ$ F.

From the storage tank 20, the cream is pumped to a pasteurizer 22 for pasteurization. The cream is preferably pasteurized at approximately 192° F. for approximately 22 seconds. The pasteurizer used is a conventional single stage type pasteurizer.

The cream is discharged from the pasteurizer at approximately 42° F. and is conveyed preferably to a plurality of storage tanks 24 where it is stored at approximately 40° F. The storage tanks 24 are used to hold the cream and provide a continuous supply of the cream for further processing as will be described subsequently.

From the storage tanks 24, the cream is pumped into the cream heater separator system 26. The cream heater separator system 26 includes a preheater 28, a heater 30 and a separator 32.

The preheater 28 and the heater 30 are heat exchangers which raise the temperature of the 40° F. pasteurized cream being pumped from the storage tanks 24. The cream is heated prior to entry into the separator 32 to help achieve the desired separation of the water component of milk from the butterfat. In the preheater 28, the cream's temperature is elevated to approximately 140° F.

From the preheater 28, the cream enters the separator 32 at approximately 140° F. The separator 32 is preferably a continuous centrifugal type separator which sepa-

rates the cream into a skim milk phase and a concentrated cream phase. The separator 32 increases the butterfat content of the cream to at least 80%.

The skim milk leaves the separator 32 and is pumped to a cooling station and then to suitable storage tanks. The skim milk is a useful byproduct and is used as an additive with hydrogenated vegetable oil for margarine and other dairy products. The skim milk obtained from the process of the present invention, unlike other butter/margarine prior art processes and especially continuous processes, does not have any traces of hydrogenated vegetable oil and is consequently a more valued byproduct having a much wider use.

The concentrated cream is pumped up through the heater 30 to ensure that the temperature of the concentrated cream is approximately 165° F.

From the heater 30, the cream is forced through the homogenizer 38 at approximately 165° F. at about 1400-1600 psi. At these process conditions, the concentrated cream is turned from an oil-in-water emulsion to a water-in-oil emulsion. Typically, cream and milk are homogenized at approximately 2000-2500 psi. During homogenization carried on at "normal" process conditions, fat globules are merely reduced to a smaller size with their original membrane material being removed. However, when the butterfat content of the cream is at least approximately 80%, at the temperature and pressure stated previously, a phase inversion of the concentrated cream occurs wherein the cream turns essentially into a liquid butter.

One type of homogenizer preferred in the process of the present invention is made by Crepaco, Inc. of Chicago, Ill., Model No. 5DL425. Model No. 5DL425 homogenizer is a single stage five-cylinder homogenizer capable of processing and inverting 8000 pounds per hour of 80% butterfat content cream. Although a particular homogenizer has been discussed, it will be understood by those skilled in the art that other homogenizers capable of inverting an 80% butterfat cream are includable within the present invention.

After the homogenizer 38, the inverted cream is cooled to approximately 115° F. through a cooling unit 40. After the inverted cream is cooled, it is stored at 115° F. in preferably one of two storage tanks 42 or 44. At least two storage tanks are used to provide a continuous flow of inverted cream to the rest of the process.

The remaining portion of the process of the present invention is illustrated in FIG. 2. In one embodiment of the process being presently constructed, the portion of the process as illustrated in FIG. 2 is repeated, such that the portion of the process illustrated in FIG. 1 flows into two duplicate second portions. However, it should be understood that a single second portion, as illustrated in FIG. 2, is all that is needed for the present invention.

From the storage tanks 42, 44, inverted cream is transported to weigh tanks 46, 48. To each weigh tank 46, 48 is transported a predetermined amount of the inverted cream.

Hydrogenated vegetable oil is stored in a plurality of storage tanks represented by tank 50. A predetermined amount of hydrogenated vegetable oil 50 is also transported to the weigh tank 46, and/or 48. Preferably, approximately 40% of the mixture in each weigh tank is inverted cream and approximately 60% is hydrogenated vegetable oil.

Lecithin is stored in a container 52, skim milk is stored in tank 53, emulsifiers, such as mono and diglycerides, are stored in a tank 54, water solution of salt is

stored in tank 51 and preservatives, such as sodium benzoate, are stored in tank 55. The lecithin, emulsifiers, brine and preservatives are also added to the mixture in the weigh tanks 46, 48.

When the proper amounts of vegetable oil, skim milk, inverted cream, lecithin, brine, emulsifiers and preservatives have been conveyed to either weigh tank, the contents of the weigh tank is allowed to flow to either blend tank 56 or blend tank 58. As is illustrated in FIG. 2, the contents of weigh tank 46 may be transported into either blend tank 56 or 58 and the contents of weigh tank 48 can be transported to either blend tank 56 or 58. Connecting the weigh tanks and the blend tanks in such a manner allows the most efficient use of the equipment in the process of the present invention.

Certain additives indicated by 59 are added to the mixture in either the blend tank 56 or the blend tank 58. For example, butter flavor 59a, starter distillate 59b, beta carotene 59c, lactic acid 59d, MARC artificial flavor 59e, and vitamin A palmitate 59f are added to the mixture in the blend tanks 56 and 58. The blend tanks 56 and 58 have agitators to mix the various additives and the inverted cream and hydrogenated vegetable oil along with the lecithin, skim milk, emulsifiers, brine and preservatives to form one substantially homogeneous mass.

From the blend tanks 56 and 58, the mixture is pumped into either surge tank 60 or 62, depending on availability. The surge tanks 60, 62 serve as reservoirs for holding excess amounts of material produced within the process and allowing the process, before and after the surge tanks, to operate essentially in a continuous manner.

From the surge tanks 60 and 62, the mixture is pumped into hold tanks 64 and 66. From hold tank 64, the material is pumped into the swept-surface heat exchanger 68. From hold tank 66, the material is pumped into a swept-surface heat exchanger 70. The swept-surface heat exchangers 68 and 70 cool the mixture into a viscous semi-solid mass. The mixture enters the swept-surface heat exchanger at approximately 120° F. and exits the swept-surface heat exchanger within a temperature range of 44°-56° F. and a preferred temperature range of 52°-54° F. The swept-surface heat exchanger has a cooled inner wall, preferably cooled by a refrigeration system such as ammonia, and a central shaft having paddles which scrape against the inner walls. The warm mixture enters the heat exchanger and cools on the inner walls. The paddles scrape the cooled mass from the walls and convey it to the discharge end of the heat exchanger. Typical swept-surface heat exchangers included within the process of the present invention are produced by Crepaco, Inc. of Illinois, Votator Division of Chemetron Corporation of Louisville, Ky., Cherry-Burrell of Iowa, and similarly configured heat exchangers produced by other manufacturers. The mixture exits the swept-surface heat exchangers 68 and 70 in a viscous semi-solid but still flowable state, ready for packaging.

The process of the present invention produces a butter/margarine dairy spread by mixing a hydrogenated vegetable oil with a cream that has essentially been converted into butter without the use of a churn. The byproduct obtained from converting the cream into essentially butter is a skim milk containing no vegetable oil.

Although the present invention has been described with reference to preferred embodiments, workers

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skilled in the art will recognize that changes may be made in form and detail without departing from the spirit and scope of the invention.

What is claimed is:

1. A churn-free continuous process for producing a margarine/butter spread comprising:

concentrating a dairy cream to approximately at least an 80% butterfat content;

processing the dairy cream through a homogenizer at a pressure and temperature such that the dairy cream is inverted from an oil-in-water emulsion to a water-in-oil emulsion;

mixing the inverted cream with a vegetable oil to form a cream/oil mixture; and

cooling the cream/oil mixture to a temperature effective to produce a spread-like viscous product.

2. The process of claim 1 and further comprising: providing a dairy cream having a butterfat content of at least 38% prior to concentrating.

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3. The process of claim 2 wherein the butterfat content of the dairy cream is initially in the approximate range of 38%-42%.

4. The process of claim 1 wherein the cream is concentrated by processing through a continuous separator in a temperature range of approximately 136° F. to 144° F.

5. The process of claim 1 wherein the dairy cream is inverted by processing through a homogenizer at approximately 1400 to 1600 psi at a temperature range of approximately 161° F. to 169° F.

6. The process of claim 1 wherein the inverted cream is mixed with the vegetable oil in a 40/60 ratio, respectively.

7. The process of claim 1 wherein the cream/oil mixture is cooled in a swept-surface heat exchanger.

8. The process of claim 7 wherein the cream/oil mixture is cooled in an approximate temperature range of 44° F. to 56° F.

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United States Patent [19]

Scharp

[11] 3,946,122

[45] Mar. 23, 1976

[54] **PROCESS OF PREPARING MARGARINE PRODUCTS**[75] Inventor: **Jacob Arie Scharp**, Vlaardingen, Netherlands[73] Assignee: **Lever Brothers Company**, New York, N.Y.[22] Filed: **Jan. 14, 1974**[21] Appl. No.: **433,170****Related U.S. Application Data**

[63] Continuation of Ser. No. 178,513, Sept. 7, 1971, abandoned, which is a continuation-in-part of Ser. No. 780,897, Dec. 3, 1968, abandoned.

[30] **Foreign Application Priority Data**

Dec. 4, 1967 Luxembourg..... 55012

[52] **U.S. Cl.** **426/604**[51] **Int. Cl.²** **A23D 3/02**[58] **Field of Search** 426/339, 340, 341, 195, 426/194, 604[56] **References Cited****UNITED STATES PATENTS**

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[57]

ABSTRACT

A butter-like plastic food spread is based on an emulsion in which a proportion of the aqueous composition constituting the continuous phase is maintained in the disperse phase constituted by the fat, which is at least partly crystallised. This effect is produced by the presence of an emulsifier system in the emulsion which while stabilising the emulsion, permits a limited degree of destabilisation when the emulsion is cooled at rest in the preparation of the product, which closely resembles butter in consistency.

3 Claims, No Drawings

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PROCESS OF PREPARING MARGARINE PRODUCTS

This application is a continuation of application Ser. No. 178,513, filed Sept. 7, 1971, now abandoned, which in turn is a continuation-in-part of application Ser. No. 780,897, filed Dec. 3, 1968, also now abandoned.

The present invention relates to food spreads containing fat and to processes for their preparation, and especially relates to the production of a margarine-like food spread having improved consistency, as far as plasticity and elasticity are concerned, in its resemblance to butter.

Consumer tests have shown that, other things being equal, the more the plasticity and elasticity of food spreads such as margarine resemble those of butter, the more the product is valued.

Margarine is commonly prepared by chilling in a closed tubular surface scraped heat exchanger an emulsion containing about 80% by weight of fat, in which an aqueous component, e.g. milk, is dispersed. During chilling and scraping many small crystal nuclei form, so that ultimately at least part of the fat blend is in the form of very small crystals. The chilled emulsion may be subsequently treated in a resting tube, where crystallisation continues and thereafter the margarine may be shaped and packed. At the moment of packing the product may resemble butter more or less closely in its consistency, according to the fat selected, but post-crystallisation may occur, impairing the elasticity and plasticity of the final product by the formation of a crystal network.

It is also possible to prepare margarine in a manner analogous to the preparation of butter, by starting from an emulsion resembling cream containing 40-60% by weight of fat dispersed in the aqueous phase. This is cooled to 12°-16°C. and ripened and churned, as in butter manufacture. The effect of the churning is to bring about phase inversion, so that the aqueous component is dispersed in the fat, and to express any surplus aqueous phase as "buttermilk".

Since this buttermilk cannot be re-used because of the risk of microbiological contamination, it is uneconomic to start with a "cream" containing 40-60% of fat, as in conventional butter-making and it is preferable instead to start with a cream containing the same amount of fat as that required in the margarine product, i.e. about 80%. In either case, however, the product undergoes post-crystallisation during storage as in the case of margarine prepared in the previously described method, with the result that a change to a less butter-like consistency occurs. This change is only partly reduced by using as the fat phase a fat blend which has been interesterified with the object of avoiding post-crystallisation.

The plastic food spread of this invention comprises a substantially unworked cooled emulsion comprising 70-90% by weight of fat, having dilatatic values at 25°C. of from 100-400 mm³/25 g., which is dispersed together with a proportion of an aqueous component of the spread in a continuous phase constituted by the remainder of the aqueous component.

The food spread of the present invention is prepared from an emulsion of fat dispersed in an aqueous component, and still contains part of the aqueous component as the continuous phase.

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Although the food spread of this invention very probably has another physical structure than butter, it shows butter-like elasticity and plasticity characteristics, even on prolonged storage at ambient temperatures.

The unique structure of this novel food spread is obtained without working by means of an emulsifier system providing an emulsion which is partly destabilised upon cooling to crystallise the fat. It is essential to avoid any substantial working of the emulsion containing an emulsifier system with these properties, otherwise phase inversion occurs and the butter-like properties characterising the product are lost.

The invention also provides a method for the manufacture of a plastic food spread as described, in which an emulsion containing the emulsifier system is prepared by dispersing the melted fat in an aqueous phase and cooling the emulsion at rest to a temperature at which at least 5% of the fat crystallises and a destabilisation degree of 0.15-0.75 is obtained as hereinafter defined.

Although the spread still contains a continuous aqueous phase, part of the aqueous component is probably enclosed in clusters of fat crystals in the dispersed phase.

The degree of destabilisation can be calculated from the relative electrical conductivity values before and after destabilisation, since that part of the aqueous component in the disperse phase is not available for conducting electricity.

The degree of destabilisation may therefore be defined as:

$$\text{degree of destabilisation} = \frac{R C \text{ before} - R C \text{ after}}{R C \text{ before}}$$

in which R C before = relative conductivity before destabilisation and R C after = relative conductivity after destabilisation. The relative conductivity is the ratio of the specific conductivities of the emulsion and its aqueous phase at the same temperature.

The specific conductivity of the aqueous phase and of the product can be determined with a conventional conductivity cell containing electrodes.

Since the conductivity of the product is markedly changed as a result of phase inversion, any working of the product caused by the insertion of the electrodes into it should be avoided as far as possible. Preferably therefore knife-edged electrodes, e.g. not more than about 0.1 mm wide, are inserted edgewise into the product. Alternatively the specific conductivity of the product may also be determined by a cell containing electrodes and inserted into the emulsion before the spread is formed by chilling the emulsion, thus eliminating the effect of working of the product when the electrodes are inserted into the spread. The relative conductivity values of the product obtained from this test, however, are somewhat higher than those obtained by the previous method, on which the degree of destabilisation specified in the accompanying claims is based.

The magnitude of this difference is mainly related to the hardness of the product, as measured in g/cm² by the method of Haighton, described in J. Am. Oil Chem. Soc. 36 (1959) pp. 345-348, in accordance with the equation:

$$\text{difference in \%} = \frac{3}{200} \times \text{hardness} + 4$$

The relative conductivity of the emulsion before destabilisation can be easily calculated from the specific conductivity values of the emulsion and its aqueous phase at a temperature at which the emulsion is not yet destabilised, i.e. at a temperature before the fat commences crystallisation.

The aqueous phase of a spread can be obtained by melting it and its emulsion may be obtained by re-emulsifying the melt in the aqueous phase.

The degree of destabilisation should not be so slight that a negligible amount of the aqueous component is transferred during cooling of the emulsion to the disperse phase, nor on the other hand should it be so great that phase inversion, i.e. aggregation of the fat particles in the disperse phase to form a continuous fat phase, takes place.

The emulsifier system should therefore be capable of performing two functions:

1. Stabilising the fatty emulsion, especially during preparation and further treatments e.g. homogenization as well as any heat treatment to kill micro-organisms;
2. Maintaining the food spread in the destabilised condition, produced by cooling.

These two functions may be combined in a single emulsifier, but more commonly the emulsifier system comprises one or more emulsifiers for each of the above functions.

The emulsifier system in the products of the invention is capable of maintaining a degree of destabilisation of 0.15 – 0.75 for a prolonged period i.e. 4 weeks or more in the unworked spread stored at a temperature of from 15°–25°C., and preferably 0.3 – 0.6, more particularly about 0.5.

Preferably the emulsifier system includes at least one derivative of a fatty acid or alcohol containing 10 – 24 carbon atoms in the alkyl group, more preferably a saturated fatty acid or alcohol having 16 – 24 carbon atoms, since such emulsifiers may be suitable to perform both the functions of stabilising the emulsion during preparation and maintaining the spread in a destabilised condition. For the latter purpose at least the emulsifier system preferably comprises a nonionic emulsifier having an HLB factor of 12.0 – 18.0 or 3.5 – 7.0.

The action of destabilising emulsifiers can be easily demonstrated by a churning test. This test can be carried out as follows:

An oil-in-water emulsion containing 70 – 90% fat is diluted at a temperature above the melting point of the fat to a fat content of 40%. This emulsion is cooled until the major part of the fat is crystallised, and the dispersion obtained is churned. After churning the fat is flocculated if the emulsion is unsuitable as the destabilising emulsifier, but otherwise remains in suspension.

Suitable destabilising emulsifiers include glycerol or sorbitan monoesters or a polyoxyethylene derivative thereof, or polyoxyethylene monoesters, eg. glycerol monostearate, sorbitan monopalmitate, sorbitan monostearate, polyoxyethylene sorbitan monostearate or polyoxyethylene monostearate.

Monoglycerides, especially those derived from palmitic acid or stearic acid, are the preferred destabilising emulsifiers of the class of emulsifiers having HLB factors of from 3.5 – 7.0. Commercial monoglycerides used in this invention should preferably contain at least 90% of monoglycerides, the remainder consisting chiefly of di- and triglycerides.

An HLB factor of 11.0 – 18.0 is adequate when the purpose of the emulsifier is stabilisation only. The HLB factors are determined either by measurement or calculation as described in J. Soc. Cosm. Chem., 1 (1949), No. 5, pages 311 – 326.

Suitable nonionic stabilising emulsifiers having an HLB factor of 11 – 18 include eg. a polyoxyethylene sorbitan or polyoxyethylene ester or ether or a polyglycerol ester or ether. Examples of these classes of emulsifiers are: decaglycerol monolaurate, polyoxyethylene sorbitan monolaurate, polyoxyethylene monostearate, or stearyl alcohol ethylene oxide ether. The last two emulsifiers mentioned and also the polyoxyethylene sorbitan monostearate are dual-effect emulsifiers capable of performing both the stabilising and the destabilising action. Anionic emulsifiers having a stabilising action, which may be used in the compositions of the invention, include sodium oleate, and partial citric acid esters of monoglycerides of fatty acids containing at least 14 carbon atoms. The monoglycerides may be derived from naturally occurring glycerides, eg. soybean oil.

Further suitable stabilising emulsifiers include proteinaceous colloids, e.g. phospho-proteins. The phospho-protein emulsifiers may comprise e.g. the alkaline salts of phospho-proteins or complexes of phosphatides with phosphoproteins. Preferably lipoprotein complexes as present in egg-yolk or buttermilk and the alkaline salt of phospho-proteins e.g. caseinate, may be used. If egg-yolk is used as a stabilising emulsifier, it must not be denatured e.g. by previous heat treatment. Preferably therefore it is used in a fresh condition, but it can also be used in a preserved state, e.g. by the addition of salt, provided that it is not denatured.

If alkali caseinate is used, it is preferred to use sodium caseinate, which is preferably made in situ in the aqueous phase from skimmed milk by the addition of calcium ion sequestering agent in the form of a sodium salt, e.g. sodium citrate, condensed phosphates, e.g. sodium tripolyphosphate, sodium tartrate or the sodium salt of ethylene diamine tetra acetic acid. The emulsifier system should be present in the food spread in minor quantities, e.g. from 0.1 – 10% by weight, based on the total emulsion.

Preferably the stabilising emulsifiers are used in quantities of 0.1 – 5%, e.g. egg-yolk 1 – 5%, preferably 1.5 – 3% and sodium caseinate 0.1 – 1%, preferably 0.2 – 0.5%.

The destabilising emulsifiers are preferably used in quantities of 0.25 – 1% by weight, e.g. 0.3 – 0.6% of glycerol monostearate as destabilising emulsifier, with 0.2 – 0.5% of sodium caseinate as the stabilising emulsifier. The fat in the plastic food spread according to the invention may comprise one or more fatty acid triglycerides which may be of either animal or vegetable origin or both and may include normally liquid fat in a blend.

In general all fats and glyceride oils suitable for margarine preparation can be applied in the food spread of the present invention, and still result in a butter-like behavior of the final product.

In order to obtain a food spread of the desired structure, the dilatation value of the fat used should preferably be from 100 – 400 mm³/25 g. at 25°C.; more preferably the dilatations of the fat should also be from 200 – 1,000 mm³/25 g at 5°C. The dilatation values of the fat blend described in this specification are determined by the method described in H.A. Boekennoogen, "Analysis and characteristics of oils, fats and fat products", Vol. 1, 1964, pages 143 – 145.

The fat in the plastic food spread of the invention may be selected, as in margarine, to confer particular properties to the spread, eg. to provide a cool-tasting effect by a steep dilatation curve, to provide spreadability at low temperatures or to give special dietetic characteristics, eg. by the presence in the fat of components having a high essential acid content.

The fat blends for the latter type of food spreads include a substantial amount of a vegetable oil containing at least 40% by weight of polyunsaturated fatty acids, especially the essential fatty acids. These acids are believed to be dietetically advantageous. An important fatty acid of the group of essential fatty acids is: cis-9, cis-12, octa-decadienoic acid, contained in safflower, cottonseed, wheat germ, soyabean, grapeseed, poppyseed, tobaccoseed, walnut, corn and especially sunflower oil. The latter is produced in large quantities and has an excellent taste due to good oxidation stability. Preferably the compositions of the present invention contain about 15% to about 70% by weight of a fat which is a vegetable oil of which at least 40% of its fatty acid content is cis-9, cis-12-octadecadienoic acid.

A particular advantage of the present invention is that it includes a food spread based on a blend of butter oil and vegetable oils rich in polyunsaturated fatty acids. The resulting product, which closely resembles butter in consistency and also in composition, is also superior in containing more polyunsaturated fatty acid than natural butter.

Excellent products have been prepared from fat blends comprising 80 – 50% of butter oil and 20 – 50% of such vegetable oils.

In order to avoid contamination of the food spread with micro-organisms it is desirable to maintain a pH value below 7 in the aqueous component. For this purpose, the aqueous component can be made acid before the emulsion is prepared by the addition of lactic acid, citric acid or other suitable acids or by the addition of bacteria by means of which lactic acid is formed in situ.

It may further be necessary to adjust the pH to a value at which particular emulsifiers present in the emulsifier system are effective. Thus sodium caseinate must be maintained in a medium of pH 5.5 – 7.0, egg-yolk at 4.0 – 7.0 and anionic synthetic emulsifiers in general should of course be maintained at an acid pH value sufficient for ionization.

The product is preferably further protected against micro-biological contamination by subjecting it to sterilization treatment or by pasteurization combined with the addition of sufficient common salt, e.g. 0% to about 10%, and 0% to about 0.7% of a preservative, eg. sorbic acid or sodium sorbate based on the aqueous phase.

Common salt may in any event be present to taste.

The presence of a part of the aqueous component in the continuous phase may be demonstrated in the products of the present invention by the behaviour of water-soluble dyestuffs admixed with the spread. The dyestuff taken up and no sharp boundary appears when a droplet of the dyestuff is added, in contrast to the behaviour

of conventional margarine in which no diffusion of the dyestuff occurs at all.

A fat-soluble dyestuff on the other hand will not diffuse at all in the products of the invention under similar conditions.

The aqueous component may conform to the usual composition employed for this purpose in the manufacture of conventional margarine. Thus water, to which may be added other components, may be used, or whole milk, buttermilk or skim milk alone or diluted.

In the preparation of the products of the invention, the emulsifier system is usually first dispersed in the aqueous component, but if fat-soluble emulsifiers are used, these at least may first be dispersed in the fat component, which should be melted when added to the aqueous component. In preparing the emulsion the fat is added to the aqueous component. Care must be taken to avoid local excess of fat.

The aqueous component is preferably also heated before the addition of the fat to a temperature at which the fat is molten. The emulsion may be prepared batchwise or continuously, eg. in the manner in which mayonnaise is made industrially. It is highly desirable to provide adequate mixing, if necessary by placing more than one stirrer in the emulsifying vessel.

The emulsion may then be homogenized, preferably in such a way that the majority of the oil is in the form of droplets of 3 – 10 microns in diameter. This homogenization treatment may be carried out eg. by passing the emulsion through a colloid mill, a Willems reactron or a homogenization valve.

The emulsion obtained is then cooled at rest, eg. in tins or tubs, in contrast to the usual margarine and butter process, in which the emulsion is agitated, ie. in a churn or a scraped surface heat exchanger.

If one of the aforementioned dual-effect emulsifiers is used it may be mixed with either the fat or the aqueous component. The process comprises the steps of mixing from 0% to about 10% by weight, total emulsion basis, of a first emulsifier which has the property of stabilizing the emulsion, with an aqueous medium comprising water, skim milk, milk solids, and mixtures thereof to form an aqueous component preparing a fat as described hereinbefore in a molten state, mixing from 0% to about 1% by weight, total emulsion basis, of a second emulsifier having the property of effecting a partial destabilization of the product, with the fat to form a fatty component, then adding about 70 – 90 parts by weight of the fatty component with mixing, to about 10 – 30 parts by weight of the aqueous component, avoiding a local excess of the fat, and forming an emulsion having the fatty component as the disperse phase, then cooling the emulsion at rest to about 10°C to about –25°C until the percentage of solid crystallized material amounts to at least 5%. The first and second stabilizers, whether the same agent or a mixture, have both stabilizing and destabilizing properties, and are present as an emulsifier system in the total amount about 0.1% to about 10%, total emulsifier basis.

The food spreads provided by the present invention are plastic in composition, that is to say that while being spreadable they are sufficiently stable in shape to retain at ambient temperatures, ie. from 15°– 25°C, the shape of a mould in which they are prepared. While this characteristic does not require a high proportion of the fat to be crystallised, there must be from 5% to 30% crystallised, and preferably at least 10%, in order to

establish a stable equilibrium in the product.

The emulsion after packing may be cooled by storage in a refrigerated chamber or by passage through a cold air blast. The temperature in the chilling space should preferably be from 10° to -25°C.

The cooling time required for obtaining the desired destabilisation degree may vary eg. from 45 minutes to 80 hours according to the conditions at which the cooling is effected.

The products of the invention exhibit a remarkable similarity to butter, especially in regard to their consistency, ie. plasticity and elasticity, which probably represent the most important properties contributing to the appeal of butter in its general handling qualities. The plasticity of a product can be ascertained by inserting a rod into the product and observing the degree of collar formation. It can also be ascertained by the fact that the product can be uniformly spread with a knife, this also being highly dependent on the hardness of the product. The elasticity can be expressed and measured by the elasticity modulus according to the method of Haighton described in "Chemisch Weekblad", No. 37, part 60 (1964), pages 508-511, and if the method is applied to a number of samples of butter and commercially available margarine, it will be observed that for butter this modulus is about $5-20 \times 10^6$ dyne/cm² and for a good quality table margarine about $30-130 \times 10^6$ dyne/cm².

The invention will now be illustrated by the following examples. In all the examples products are described having a destabilisation degree of between 0.15 and 0.75. All parts and percentages described in the examples are by weight.

The degree of destabilisation of the products of the invention was calculated from relative electrical conductivity values of the spread and the emulsion from which it is prepared.

The similarity to butter can of course be enhanced by careful selection of flavouring agents, vitamins and other additives such as are used for this purpose in margarine.

Test for the determination of the relative conductivity in the food spread

A conductivity cell was inserted into a sample of the spread at 15°C. The cell comprised a pair of very thin metal electrodes, for which uncoated razor blades 0.05 mm in width have successfully been used. The electrodes were mounted on a plastic block at a distance of 35 mm, providing a cell constant of 0.21 cm⁻¹.

The conductivity cell was connected with a Wheatstone bridge (Philips PR 9500) and the specific conductivity was measured at a frequency of 1000 cycles/sec.

Using the same Wheatstone bridge, the specific conductivity of the aqueous phase was measured at a temperature of 15°C, with a conventional conductivity cell having two stainless steel electrodes, of a surface of 225 mm² and a cell constant of 0.27 cm⁻¹.

The relative conductivity of the food spread is:

$$\frac{\text{Specific conductivity food spread}}{\text{Specific conductivity aqueous phase}}$$

EXAMPLE 1

A fat composition was prepared by adding 0.5% of distilled partial glyceride esters of a mixture of palmitic and stearic acids containing 90% of monoglycerides and having an HLB value of 4.2 and minor proportions of colouring oils, vitamins and flavours to a fat blend consisting of:

- 15 parts of sunflower oil
- 35 parts of sunflower oil hardened to a slip melting point of 34°C.
- 35 parts of coconut oil
- 15 parts of palm oil hardened to a slip melting point of 45°C.
- and having dilatation values of
 - 890 at 5°C.
 - 665 at 15°C.
 - 420 at 20°C.
 - 245 at 25°C.
 - 125 at 30°C.
 - 25 at 35°C.

An aqueous composition was prepared consisting of 90 parts of skim milk containing 2.8% of casein 8 parts of 10% sodium citrate solution 2 parts of 8% citric acid solution

The pH of the aqueous composition was 6.2, and about 2.35% of sodium caseinate was formed in situ, corresponding to 0.4% in the ultimately formed emulsion.

- 83 parts of the fat composition were melted by heating to a temperature of about 60°C. and slowly added to 17 parts of the aqueous composition, while stirring with a propeller stirrer in a jacketed vessel at 60°C., to form an oil-in-water emulsion. The emulsion formed was then homogenized in a colloid mill adjusted to a clearance of 0.6 mm and with an average circumferential speed of 11 m/sec.

The homogenized emulsion, in which 80% of the fat particles were in the range of 3 - 10 microns, was subjected to heat treatment for sterilisation for 15 sec. at 130°C. in a tubular heat exchanger and after cooling down to a temperature still above 70°C. was filled into miniature tubs each containing 250 grams which were heat-sealed with a lid under aseptic conditions.

- After storage for 12 hours at 5°C. the product was assessed at 15°C., and showed the percentage of solid fat at this temperature of 30%. It also exhibited an excellent butter-like consistency and was cool and thin in the mouth. Colour diffusion tests showed that the product contained a continuous aqueous phase. The elasticity modulus was $18.5 \cdot 10^6$ dyne/cm². The product did not show appreciable collar formation, when a rod was inserted into a sample. The relative conductivity of the food spread obtained was 0.075, compared with 0.098 in the oil-in-water emulsion before cooling. The destabilisation degree of the product obtained was

$$\frac{0.098 - 0.075}{0.098} = 0.24$$

and remained practically unchanged on storage at temperatures from 15° - 20°C. for a period of 4 weeks.

EXAMPLE 2

Example 1 was repeated with an aqueous composition consisting of:

15 parts of fresh egg-yolk as the stabilising emulsifier

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2 parts of sodium chloride
0.5 parts of potassium sorbate as a preservative and
72.5 parts of tap water
and adjusted to pH 5.0 by adding lactic acid. The product showed no collar formation and had a pleasant, butter-like, mildly sour and salty taste. Its elasticity modulus was 12.10^6 dyne/cm², and its destabilisation degree was initially 0.31 and after 4 weeks storage at 15°C. 0.39.

EXAMPLE 3

The process according to Example 1 was repeated with the exception that the aqueous composition contained 0.7% sorbic acid and was adjusted to pH 5.5 before emulsifying. In the homogenized emulsion was heat treated instead at 80°C. for 15 seconds for pasteurisation before cooling at rest.

The initial destabilisation degree of the product was 0.55 and remained practically unchanged during 4 weeks of storage at a temperature of from 15°–20°C. The product practically showed no collar formation and was convenient to spread and these properties were not lost on storage at 15°–20°C. for 4 weeks.

The elasticity modulus of the product was 12.5×10^6 dyne/cm².

EXAMPLE 4

Example 1 was repeated using the following fat blend:

40 parts of sunflower oil
35 parts of sunflower oil hardened to a slip melting point of 34°C.
10 parts of coconut oil
15 parts of palm oil hardened to a slip melting point of 45°C.

The blend had a dilatation of:

710 at 5°C.
545 at 15°C.
430 at 20°C.
275 at 25°C.
140 at 30°C.
25 at 35°C.

After sterilisation the emulsion was filled instead at a temperature of 75°C. into tins which were sealed and continuously transported through a cooling tunnel, in which each tin was subjected for three-fourth of an hour to a cold air blast having a temperature of -22°C. and a velocity of 3 m/sec.

At 15°C. the product did not show any collar formation, could be spread uniformly with a knife, and had a destabilisation degree of 0.57. The elasticity modulus of the product was 20×10^6 dyne/cm². After 4 weeks of storage both at refrigerator temperatures and at temperatures of from 15°–20°C. these properties remained practically unchanged.

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EXAMPLE 5

Example 1 was repeated except that the entire emulsifier system, including the monoglycerides present in the fat composition in Example 1, was contained in the aqueous composition, having the following components:

50 parts of skim milk
3 parts of the monoglycerides
5 parts of decaglycerol monolaurate (HLB value 15.7) as the stabilising emulsifier
40 parts of water.

The pH of the aqueous composition was about 6.4.

The destabilisation degree of the product was 0.40 and after 4 weeks storage at 15°C. 0.55. The product did not show appreciable collar formation and had a good elasticity represented by an elasticity modulus of 14.3×10^6 dyne/cm². These properties were retained on storage.

EXAMPLE 6

An emulsion was prepared as in Example 1 from 17.4 parts of the same aqueous phase and 82.6 parts by weight of a fat blend, consisting of 70 parts of molten butterfat and 30 parts of refined sunflower oil and containing the same proportion of the destabilising emulsifier as before. The fat blend had the following dilatation values:

930 at 5°C.
820 at 10°C.
590 at 15°C.
315 at 20°C.
200 at 25°C.
95 at 30°C.
20 at 35°C.

The fat was dispersed at a temperature of 70°C. in the aqueous phase, and after the emulsion was homogenized in a Willems reactron high frequency generator 80–90% of the fat particles had a diameter of 3–10 microns.

The hot emulsion was filled at a temperature of 70°C. in pre-sterilised tubs which were then cooled for 12 hours at 5°C., and subsequently stored at 15°C.

Before and after a storage period of 4 weeks the samples were compared with butter and products of the same composition, but prepared by either a "phase inversion process" (as described in British Patent Specification No. 801,118) or a conventional "Votator process" as described in "Margarine" by Andersen and Williams, Pergamon Press (1965) page 248, in which the fat blend together with the aqueous phase is cooled and worked in a scraped surface heat exchanger for a residence time of about 6 seconds and subsequently fed for a residence time of 2 minutes into a resting tube.

	Butter	Product of the invention	Phase inversion product	Votator product
Hardness g/cm ² at 5°C.	2200	1550	1285	1820
10°C.	1700	820	845	1200
15°C.	1065	495	320	365
20°C.	280	160	too soft	70
Elasticity modulus (10 ⁶ dyne/cm ²)	18.0	20.0	23.2	25.6
Destabilisation degree	> 0.99	0.44	> 0.99	> 0.99
Collar formation	no	no	no	slight
Oil exudation (48 hours at 22°C.)	no	no	strong	strong

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After 4 weeks storage at 15°C. almost the same values were obtained for each of the three products. From the hardness values the spreadability of the product can be assessed according to Haighton J. Am. Oil Chem. Soc. 36 as 8,347 as follows:

- <50 g/cm² = very soft to just pourable
- 50 - 100 = very soft, not spreadable
- 100 - 200 = soft, but already spreadable
- 200 - 800 = satisfactorily plastic and spreadable
- 800 - 1000 = hard, but satisfactorily spreadable
- 1000 - 1500 = too hard, limit of spreadability
- <1500 = too hard.

The product of the invention thus has a better spreadability range as compared with the phase inversion product and the Votator product. Moreover it exhibited negligible oil exudation.

EXAMPLE 7

A food spread was prepared from 81.2 parts by weight of a fat blend and 17.8 parts by weight of an aqueous phase. The fat blend consisted of

- 40 parts of sunflower oil
- 30 parts of coconut oil
- 15 parts of sunflower oil hardened to a slip melting point of 34°C.
- 15 parts of an interesterified fat blend of 65 parts of fully hydrogenated palmkernel oil and 35 parts of fully hydrogenated palm oil.

The dilatation values of the fat blend were:

- 760 at 5°C.
- 715 at 10°C.
- 525 at 15°C.
- 325 at 20°C.
- 135 at 25°C.
- 45 at 30°C.

To this fat blend 0.5% by weight of the monoglycerides as used in Example were added, and also 25 mg/kg of β -carotene and flavours. The fat blend was dispersed at 70°C. in the same way as described in Example 1 in an aqueous composition consisting of:

- 90 parts of skim milk containing 2.8% of casein
- 6.3 parts of a 10% sodium citrate aqueous solution
- 3.7 parts of an 8% citric acid solution, providing 0.3% of the emulsion of sodium caseinate in situ and 10.0 parts of common salt. The pH of the aqueous phase was 6.5.

The oil-in-water emulsion obtained was filled at 70°C. in tubs and after a cooling period at rest of 12 hours at 5°C. a plastic product was obtained which was easily spreadable, quick melting in the mouth and did not show any collar formation. The salt impression of this product corresponded with that of a normal margarine having 1.5% of salt in the aqueous phase. The destabilisation degree was 0.33 and the elasticity modulus 15×10^6 dyne/cm², which figures were retained after 4 weeks of storage at 20°C.

EXAMPLES 8 - 15

In these examples several food spreads were prepared from an emulsion of 82 parts of a fat blend dispersed in 18 parts of an aqueous composition, containing a nonionic emulsifier system for stabilising the emulsion during preparation and homogenisation. The fat blend consisted of:

- 10 parts of sunflower oil
- 15 parts of soybean oil, slightly hydrogenated (I.V. 98)
- 25 parts of coconut oil

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- 10 parts of palmkernel oil
- 5 parts of palm oil hardened to a melting point of 45°C.

35 parts of sunflower oil hardened to a melting point of 35°C.

The dilatation values of this blend were:

- 900 at 5°C.
- 800 at 10°C.
- 650 at 15°C.
- 375 at 20°C.
- 200 at 25°C.

The aqueous composition consisted of:

- 50 parts of skim milk
- 3 parts of the partial glyceride esters, used in Example 1 as a destabilising emulsifier.
- 5 parts of a nonionic emulsifier
- 40 parts of water

The pH of the aqueous phase was 6.5.

The total 19 nonionic emulsifiers were compared, out of which 8 emulsifiers were selected, all having HLB values of from 12-18, as being suitable for use in the invention as stabilising emulsifiers. The emulsions were prepared as described in Example 1 and filled at 70°C. into tubs, which were then sealed and cooled for 12 hours at a temperature of 5°C. The plastic properties and the destabilisation degree of the products according to the invention were almost completely retained after a storage period of 4 weeks at a temperature of 15°- 20°C. Further details are shown in the accompanying Table 1.

EXAMPLE 16 - 21

Several food spreads were prepared in these examples from an emulsion comprising 80 parts of a fat blend containing 1% by weight of a nonionic destabilising emulsifier and dispersed in 20 parts of an aqueous composition in which 0.4% of sodium caseinate based on the total emulsion was formed in situ as the stabiliser emulsifier. The fat blend consisted of:

- 35 parts of sunflower oil
- 10 parts of palm oil hardened to a slip melting point of 45°C.
- 20 parts of coconut oil
- 35 parts of sunflower oil hardened to a slip melting point of 35°C.

The dilatation values of the fat blend were:

- 860 at 5°C.
- 760 at 10°C.
- 650 at 15°C.
- 450 at 20°C.
- 250 at 25°C.

The aqueous composition consisted of 90 parts by weight of skim milk containing 2.8% of casein, 8 parts of a 10% aqueous sodium citrate solution and 2 parts of a 8% citric acid solution.

The pH of the aqueous phase was 6.2.

The spread was prepared as described in Example 1. The samples obtained were tested at 15°C. the next day and after 4 weeks storage at 15°- 20°C.

In total 17 nonionic emulsifiers were compared. The results are shown in the accompanying Table II, from which it is clear that a satisfactory product is obtained in accordance with the invention from destabilising nonionic emulsifiers having an HLB value within the ranges 3.5 - 7.0 or 11.0 - 18.0, and based on saturated fatty acids having 16 - 24 carbon atoms.

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EXAMPLE 22

Food spreads were prepared as described in Example 1 containing 80% of the same fat blend and the same proportion of monoglyceride destabilising emulsifier and 20% of an aqueous composition, consisting of

90 parts of skim milk containing 2.8% of casein.

7 parts of a 10% sodium citrate solution

3 parts of an 8% citric acid solution to produce 0.35% of caseinate as stabilising emulsifier in situ.

The pH of the aqueous phase was 5.85.

The emulsion was divided into three portions and the degree of destabilisation of each sample was measured after storage at 10, 15 and 20°C. for 72 hours and then for 1, 2, 3 and 4 weeks at these temperatures.

Three further samples were prepared in the same way, except that no destabilising emulsifier was added. The results are summarised in Table III. From the Table it appears that the products according to the invention retained the required destabilisation degree even after prolonged storage at ambient temperature. They were superior in butter-like consistency throughout as compared with the products without destabilising emulsifier, and did not show appreciable collar formation, or loose moisture.

EXAMPLE 23

An emulsion was prepared as in Example 1 from 17.8 parts of the same aqueous composition as used in Example 3 and 82.2 parts by weight of a fat blend containing the same proportion of the monoglyceride destabilising emulsifier as before. The fat blend consisted of:

70 parts of sunflower oil

15 parts of sunflower oil hardened to a slip melting point of 34°C.

15 parts of an interesterified fat blend of 65 parts of fully hydrogenated palmkernel oil and 35 parts of fully hydrogenated palm oil.

The fat blend had the following dilatation values:

450 at 5°C.

405 at 10°C.

315 at 15°C.

235 at 20°C.

145 at 25°C.

70 at 30°C.

15 at 35°C.

The amount of polyunsaturated fatty acids in the fat blend was 41.5%.

The homogenized emulsion was filled at a temperature of 70°C. into pre-sterilised tubs, which were cooled for 12 hours at 5°C. and subsequently sealed and stored at 10°C. The fresh product did not show any

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collar formation and had an elasticity modulus of 12.5×10^6 dyne/cm². It was also easily spreadable with a knife, even at 10°C., because the hardness value at this temperature was only 560 g/cm².

The destabilisation degree was 0.36.

After 4 weeks storage both at 10°C. and at 15°C. no substantial change in the consistency was observed, and the destabilisation degree was 0.44.

EXAMPLE 24

The process of Example 1 was repeated, except that the emulsion was made from a different aqueous composition and contained only one emulsifier to perform both functions of stabilising the emulsion during preparation and destabilising the food spread.

The aqueous composition consisted of:

50 parts of skim milk

5 parts of polyoxyethylene (5) monostearate

45 parts of water.

The pH of the aqueous composition was about 6.3. The destabilisation degree was 0.47 and after 4 weeks at 15°C. 0.58.

The product was easy to spread at room temperature, did not show collar formation and the elasticity modulus was 18.2×10^6 dyne/cm². These properties were retained on storage.

EXAMPLE 25

The process of Example 24 was repeated, except that 5 parts of polyoxyethylene (2) monostearylether were added to the aqueous component as the emulsifier system.

The degree of destabilisation of the fresh product was 0.25 and after 4 weeks storage at 15°C. 0.40.

The product was easy to spread at room temperature did not show any collar formation and the elasticity modulus was 17.5×10^6 dyne/cm², which properties were retained on storage.

EXAMPLE 26

The process of Example 1 was repeated, except that the emulsion was made from a different aqueous composition containing 10 parts of a partial citric acid ester of monoglycerides derived from soybean oil fatty acids.

The aqueous phase was adjusted by 1 N sodium hydroxide to a pH of 6.5.

The destabilisation degree of the fresh product was 0.23 and after 4 weeks' storage at 15-20°C. 0.36.

The product was easily spread at room temperature, did not show any collar formation and had an elasticity modulus of 15.3×10^6 dyne/cm². These properties were retained on storage.

TABLE I

Preparation and Properties of Food Spreads containing Nonionic Emulsifiers											
Example	Emulsifier	HLB value	preparation possible?	collar formation		Visual Assessment				destabilization	
				5°	15°	plasticity 5°	15°	loose moisture 5°	15°	elasticity 15°	degree at 15-20°C
8	decaglyceryl monolaurate	15.7	Yes	None	None	Mod.	Good	Mod.	Mod.	Good	0.35
—	decaglyceryl dioleate	11.2	No	Emulsion coarsens after homogenization							—
—	decaglyceryl tristearate	9.0	No	Emulsion breaks on preparation							—
—	triglyceryl monoester of shortening	9.3	No								—
—	triglyceryl hexanoate	—	No								—
—	triglyceryl monostearate	8.8	No.								—
—	triglyceryl monodistearate	5.2-8.8	No	Emulsion coarsens after homogenization							—
—	hexaglyceryl octanoate	—	Yes	considerable		Poor	Poor	Good	Bad	1	
—	hexaglyceryl distearate	8.6	No	Emulsion coarsens after homogenization							—
9	decaglyceryl monolaurate	15.7	Yes	None	None	Poor	Mod.	Mod.	Good	Good	0.48
10	decaglyceryl dilaurate	12.9	Yes	None	None	Poor	Good	Mod.	Good	Good	0.52
—	decaglyceryl distearate	11.2	No	Emulsion coarsens after homogenization							—

TABLE I-continued

Example	Emulsifier	HLB value	Preparation and Properties of Food Spreads containing Nonionic Emulsifiers emulsion preparation possible?	Visual Assessment							destabilization degree at 15-20°C
				collar formation		plasticity		loose moisture		elasticity	
				5°	15°	5°	15°	5°	15°	15°	
—	polyglyceryl ester of higher saturated fatty acids	—	No.								—
11	polyoxyethylene (20) sorbitan monolaurate	16.7	Yes	None	None	Good	Good	Some	Some	Good	0.29
—	polyoxyethylene (7.5) monostearate	11.1	No								—
12	polyoxyethylene (40) monostearate	16.9	Yes	None	None	Mod.	Good	Good	Mod.	Good	0.40
13	polyoxyethylene (50) monostearate	17.9	Yes	None	None	Good	Good	Some	Mod.	Good	0.39
14	stearyl alcohol (20) ethylene oxide ether	15.4	Yes	None	None	Mod.	Good	None	Some	Good	0.52
15	polyoxyethylene (7.5) monostearate + polyoxyethylene (50) monostearate	14.5	Yes	None	None	Mod.	Good	Mod.	Mod.	Good	0.37

TABLE II

Example	Emulsifier	HLB values		Destabilization degree		Visual assessment at 15°C			
		Calculated	Stated	next day	after 4 weeks	Collar formation	Loose moisture	Elasticity	Plasticity
16	blank	—	—	0.46	1	high	very bad	bad	very bad
	glyceryl monobehenate	3.6		0.48	0.52	none	good	good	good
17	glyceryl monostearate	4.1		0.39	0.42	none	good	very good	very good
	glyceryl monooleate	4.2		0.47	>0.99	high	very bad	bad	very bad
	glyceryl monolaurate	5.3		0.67	1	high	very bad	bad	very bad
	partial polyglyceryl ester of tallow fatty acids	6.6				emulsion failed			
	partial polyglyceryl ester of shortening	9.3				"			
	partial polyglyceryl ester of stearic acid	9.0				"			
	partial polyglyceryl ester of oleic acid	8.6				"			
	partial polyglyceryl ester of lauric acid	15.7		0.55	1	high	bad	bad	very bad
	ethyleneglycerylmonostearate	2.7		0.47	1	high	very bad	bad	very bad
	propyleneglycerylmonostearate	3.4				none	bad	bad	very bad
	saccharose monostearate	7.7				emulsion failed			
	sorbitan monolaurate		8.6	0.50	>0.99	slight	bad	good	moderate
18	sorbitan monopalmitate		6.7	0.71	0.72	none	good	good	rather good
19	sorbitan monostearate		4.7	0.71	0.69	none	good	good	good
	sorbitan monooleate		4.3	0.52	1	slight	very bad	too soft	bad
20	polyoxyethylene (20) sorbitan monostearate		14.9	0.40	0.52	none	good	good	good

Table III

		After Cooling					
		Destabilising Degree					
Cooling temperature °C.	fresh	1 week	2 weeks	3 weeks	4 weeks		
10	Destabiliser	0.26	0.26	0.29	0.32	0.32	50
	No destabiliser	0.19	0.83	0.91	0.92	1.00	
15	Destabiliser	0.18	0.18	0.21	0.25	0.39	55
	No destabiliser	0.31	0.71	0.86	0.91	1.00	
20	Destabiliser	0.18	0.18	0.23	0.23	0.24	
	No destabiliser	0.64	0.68	0.86	0.92	1.00	

What is claimed is:

1. A process for preparing margarine or margarine-like plastic fatty emulsion food spread resembling butter in consistency and containing an emulsifier or an emulsifier system exhibiting both stabilizing and destabilization functions comprising the steps of:

a. preparing an aqueous phase from the group consisting of water, skim milk, an aqueous phase containing milk solids and mixtures thereof with an effective amount of up to about 10% by weight of

the spread of a stabilizing emulsifier to stabilize the emulsion during homogenization as well as any heat treatment;

- b. preparing a molten fat, said fat having a dilatation value at 25°C of about 100 to 400 mm³/25g;
- c. preparing a fatty phase by mixing with said molten fat an effective amount of up to about 1% by weight of the spread of a destabilization emulsifier to maintain the final food spread in a destabilized condition;
- d. dispersing 70 to 90 parts by weight of said molten fatty phase in 10 to 30 parts by weight of said aqueous phase and forming an emulsion wherein the fatty phase is the dispersed phase; and
- e. cooling said emulsion while at rest to a temperature between 10°C and -25°C until the percentage of solid crystallized material amounts to at least 5% to form the spread, and wherein during said cooling step there is effected a destabilization of said spread to a degree of 0.15 to 0.75 whereby there is distributed in the dispersed phase a proportion of the aqueous component being measured by a de-

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crease in electrical conductivity of the product, said decrease being not less than 5% and not more than 80% of the electrical conductivity of said emulsion prior to crystallization, said emulsifier or emulsifier system having stabilizing and destabilizing properties, being present in an amount of from about 0.1% to about 10% by weight of the total emulsion.

2. A process according to claim 1 wherein the said stabilizing emulsifier is a proteinaceous colloid selected

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from the alkaline salts of phospho-proteins and complexes of phosphatides with phospho-proteins, and the said destabilizing emulsifier is selected from monoglycerides having an HLB factor from 3.5 to 7.0.

5 3. A process according to claim 1 wherein the said stabilizing emulsifier is selected from egg yolk and sodium caseinate, and the said destabilizing emulsifier is selected from monoglycerides of palmitic and stearic acid.

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CONSIGNACION	BANCO DE BOGOTA	062754387	420523305	25/07/2011	304.000.00

*** Conceptos Pagados ***

CANT.	RENTISTICO	CONCEPTO	Vr. UNIDITARIO	Vr. CONCEPTO
1	50005-01-04	PRESENTACION DE OBSERVACIONES A SOLICITUDES	12	MARCAS Y LEMAS COMERCIALES
			304.000.00	304.000.00
				\$304.000.00

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CONSIGNACION	BANCO DE BOGOTA	062754387	420523305	25/07/2011	304.000.00

*** Conceptos Pagados ***

CANT.	RENTISTICO	CONCEPTO	VR. UNDITARIO	VR. CONCEPTO
1	50005-01-04 PRESENTACION DE OBSERVACIONES A SOLICITUDES	12 MARCAS Y LEMAS COMERCIALES	304.000.00	304.000.00
				\$304.000.00

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2020
Bogotá, D.C.,

Doctor:
Álvaro Correa Ordoñez.
Apoderado

Oficio N°:

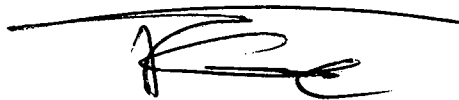
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ASUNTO:	Radicación N°	09-126834
	Trámite	002
	Evento	001
	Actuación	440
	Folios	057

Con fundamento en lo previsto por el artículo 43 de la Decisión 486 de la Comisión de la Comunidad Andina, se le comunica que la oposición presentada por el doctor Santiago Márquez Robledo, en su calidad de apoderado de C.I. Sociedad Industrial de Grasas y Vegetales Sigra S.A. – C.I. SIGRA S.A., reúne los requisitos formales exigidos por la ley al momento de su presentación.

En cumplimiento de lo dispuesto en la citada norma, se le concede el término de sesenta (60) días hábiles siguientes a la fecha de notificación del presente oficio, para que haga valer sus argumentaciones y presente pruebas.

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 N° 10 de 2001.



JOSÉ LUIS SALAZAR LÓPEZ
Director de Nuevas Creaciones (C).

22 SET. 2011

El anterior oficio fue notificado por fijación en lista de fecha, _____.

2020103/202021