

BOGOTÁ - COLOMBIA
SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO

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Tra PATENTES Eve: 1 REGDEPOSITO
Ant 224 RESPUESTAREQUE Folios 15

Señor
SUPERINTENDENTE DE INDUSTRIA Y COMERCIO
DIVISION DE NUEVAS CREACIONES
E. _____ S. _____ D. _____

jllcco@lloredacamacho.com

Re: P1.-SOCIETE DES PRODUITS NESTLE S.A.-Solicitud de Patente de Invención para "COMPOSICIÓN Y MÉTODO DE ELABORACIÓN DE ALIMENTO PARA MASCOTAS".-Clase A23K.-Expediente número 01-022.588.-

1. Me refiero al auto dictado por ese Despacho notificado por fijación en lista de 19 de Abril de 2007.

2. Con el fin de dar respuesta a las objeciones expuestas por el señor Examinador en su Concepto Técnico No. **0554** bajo los acápites de Claridad de la Solicitud y Unidad de Invención, me permito presentar las siguientes modificaciones y argumentos técnicos, por medio de los cuales no sólo se superan plenamente dichas objeciones, sino que además se demuestra en forma contundente la patentabilidad de la presente solicitud.

3. **Claridad:**

En respuesta a las diversas objeciones presentadas por el señor Examinador en su Concepto Técnico No. **0554** en relación con la claridad de las reivindicaciones de la invención bajo estudio, me permito manifestar que es deseo del solicitante presentar **un nuevo capítulo reivindicatorio compuesto por 18 reivindicaciones**, el cual ha sido modificado de conformidad con dichas observaciones, con el fin de definir en forma más clara y precisa el objeto de la invención, así como también con el propósito de limitar el alcance de la misma y de hacerla fácilmente distinguible de las enseñanzas del estado de la técnica.

Adicionalmente, resulta importante señalar al señor Examinador que las nuevas reivindicaciones incluidas en el capítulo reivindicatorio presentado junto con este escrito, corresponden a las reivindicaciones que fueron concedidas para la solicitud equivalente en Europa, bajo el número de patente **EP 1 267 636 B1**, de las cuales me permito anexar copia.

Sobre este particular, me permito dirigir la atención del señor Examinador a las siguientes consideraciones en relación con las modificaciones realizadas:

- (i) La nueva reivindicación 1 corresponde a la combinación de las reivindicaciones 1 y 4 originalmente presentadas, mediante la inclusión de la expresión "en donde el cuerpo es capaz de extruir un jugo grasoso cuando es sometido a una presión baja" originalmente comprendida en la reivindicación 4;
- (ii) Adicionalmente, dentro de la nueva reivindicación 1 modificada, se ha eliminado la expresión "un formulado cuerpo rico en proteínas" y se ha incluido la expresión "un cuerpo gelificable térmicamente, formulado, comestible, que comprende al menos 20% en peso de proteína", de conformidad con lo expuesto en las líneas 8 a 13 y 17 a 18 de la página 7 de la memoria descriptiva, definiendo así en forma más clara la proporción del contenido de proteína dentro del producto alimenticio para mascotas reivindicado;
- (iii) De la misma forma, en la nueva reivindicación 1 se ha incluido la expresión "un contenido de lípidos de 15% a 25% en peso", con el fin de seguir definiendo la composición alimenticia en términos de "los compuestos con los cuales se a formulado así como también por las proporciones de los mismos" tal como ha sido sugerido por el señor Examinador en su Concepto Técnico. En relación con esta modificación, me permito dirigir la atención del señor Examinador al hecho de que debido a un error involuntario en la preparación del texto en español, en las líneas 5 a 6 de la página 16 de la descripción, en donde se encuentra el sustento para la anterior modificación, aparece "alrededor de **18%** a alrededor de 25% en peso de lípidos", por lo que también se ha modificado la página 16 para reemplazar la cifra errónea "18" por la cifra correcta "**15**".

Con el fin de demostrar que las anteriores modificaciones **no constituyen una ampliación** del objeto de la invención, me permito dirigir la atención del señor Examinador a la **línea 26 de la página 8 de la copia certificada del documento sobre el cual reivindica prioridad** la presente solicitud tal como fue presentada ante esa Oficina, en donde se puede apreciar claramente que el rango correcto y originalmente revelado corresponde a un contenido de **15** a 25% de lípidos. De conformidad con lo anterior, me permito anexar copia de la página 8 anteriormente mencionada.

- (iv) Las nuevas reivindicaciones 2 a 10 corresponden a las reivindicaciones 2, 3, y 5 a 7 y 9 a 12 originalmente presentadas, en las que solamente se han

modificado sus dependencias de conformidad con las modificaciones hechas a la reivindicación 1;

- (v) La nueva reivindicación 11 corresponde a la reivindicación original de proceso 13, en la cual se ha incluido la materia de la reivindicación 19 originalmente presentada, en donde se ha reemplazado la expresión "proveer un cuerpo rico en proteínas, coherente" por la expresión correcta "proveer un cuerpo coherente de alimento producido a partir de una fuente de proteína gelificable térmicamente", cuyo sustento corresponde al ya presentado para el caso equivalente dentro de la reivindicación 1.

Finalmente, se ha incluido la expresión "en donde después de la reducción del contenido de humedad el cuerpo comprende al menos 20% en peso de proteína", cuya sustento se encuentra en las líneas 17 a 18 de la página 7 de la descripción;

- (vi) Las nuevas reivindicaciones 12 a 18 corresponden a las reivindicaciones 14, 15, 17 y 20 a 22 originalmente presentadas, en las que solamente se han modificado sus dependencias de conformidad con las modificaciones hechas a la reivindicación 1; y
- (vii) Finalmente, **se han eliminado las reivindicaciones 8, 16 y 23 a 32** originalmente presentadas.

De conformidad con las anteriores modificaciones, es claro que mediante la cancelación de algunas expresiones poco claras y la forma como se ha presentado ahora la nueva reivindicación 1, se han superado plenamente todas las observaciones que al respecto se han presentado por parte del señor Examinador en su Concepto Técnico, ya que **se ha definido el alimento para mascotas objeto de la invención mediante sus características técnicas particulares**, de manera tal que resulta completamente clara para una persona versada en la materia interesada en las enseñanzas de la solicitud, así como también resulta claro hasta donde llega el alcance de la misma.

De la misma manera, con las modificaciones realizadas a la nueva reivindicación independiente 11 dirigida a proteger el proceso para la obtención del alimento para mascotas señalado, se han superado las objeciones en relación con la claridad de las reivindicaciones de proceso, toda vez que **se han definido en forma más clara las etapas y condiciones que llevan a la obtención del novedoso producto alimenticio revelado en la solicitud** en estudio, permitiendo así que una persona versada en la materia, interesada en los contenidos de la presente invención, pueda identificar sin problema alguno, la forma en la que debe realizar el proceso para obtener el producto reivindicado y como llevarlo a cabo.

Adicionalmente, me permito manifestar al señor Examinador que dados la naturaleza y el contexto en el cual se desarrolla la invención, la definición que se hace del objeto de la solicitud en algunas reivindicaciones mediante características como por ejemplo que "el cuerpo tiene una superficie no uniforme" o "el cuerpo tiene un elevado buen sabor atribuible a la reacción del tostado" son totalmente apropiadas para un producto alimenticio para mascotas, ya que **delimitan y diferencian al producto revelado en forma adecuada dentro del campo de los desarrollos alimenticios para animales, en donde la forma de la superficie o el sabor resultan fundamentales para diferenciar unos productos de otros**. En este sentido, es claro que este tipo de características permiten definir y delimitar efectivamente el objeto de la invención en el contexto en el cual ésta se desarrolla, facilitando así su comprensión por parte de una persona con conocimientos en esta materia específica.

Finalmente, me permito resaltar que las anteriores modificaciones **no amplían de ninguna forma** el alcance de la solicitud tal como fue originalmente presentada, en concordancia con lo establecido en el artículo 34 de la Decisión 486, 2000, ya que las mismas se presentan con el fin de dar respuesta a las objeciones del señor Examinador y constituyen en sí mismas una limitación de la materia como se presentó inicialmente ante ese Despacho.

4. **Unidad de Invención:**

De conformidad con las modificaciones realizadas al capítulo reivindicatorio expuestas en el numeral anterior, me permito manifestar al señor Examinador que por medio de las cancelaciones de las reivindicaciones 23 a 32 originalmente presentadas **se ha superado completamente cualquier objeción en contra del requisito de la unidad de la invención**, toda vez que la presente solicitud se refiere ahora a **un único producto** correspondiente al alimento para mascotas de las nuevas reivindicaciones 1 a 10 y **al proceso para su obtención** de las reivindicaciones 11 a 18, de forma tal que ya no se están presentando productos que puedan ser considerados como diferentes y sin relación técnica entre sí. En consecuencia, la presente invención si cumple con el requisito de unidad de invención tal y como esta establecido en el artículo 25 de la Decisión 486, 2000.

5. Me permito manifestar a usted que el poder a mi conferido para asuntos relativos a la propiedad industrial de la sociedad peticionaria, fue presentado a ese Despacho con mi memorial de 3 de Septiembre de 2004.

6. Anexo me permito presentar:

- (i) Recibo número 07-55.885, expedido por la Superintendencia de Industria y Comercio, que acredita el pago de las modificaciones mencionadas;
- (ii) Copia de las páginas 23 a 26 correspondientes al capítulo reivindicatorio ahora modificado, que reemplaza al capítulo originalmente presentado y actualmente estudiado, en las cuales se han realizado las modificaciones anteriormente mencionadas;
- (iii) Copia de la página 16 de la descripción, en la que se ha realizado la modificación correspondiente al rango correcto para el contenido de lípidos del alimento para mascotas objeto de la presente solicitud;
- (iv) Copia informal de la página 8 de la copia certificada del documento sobre el cual se reivindica prioridad, en donde se aprecia que el contenido de lípidos para la composición de la invención comprendido en el documento original es del 15% al 25% en peso;
- (v) Copia informal de la carátula y las reivindicaciones de la patente **EP 1 267 636 B1**, correspondiente a la solicitud Europea concedida equivalente a la presente invención;

7. En vista de lo anterior, ruego a usted proceder a estudiar nuevamente la solicitud a la luz las modificaciones y los argumentos presentados y conceder el privilegio de patente solicitado.

Señor Superintendente,


GUSTAVO TAMAYO ARANGO
T.P. 37.172



NOTARIA SEXTA DE BOGOTA

RECONOCIMIENTO Y PRESENTACION PERSONAL

Bogotá, D.C.

13 JUL 2007

Ante mí **PABLO MENDEZ BARRAJAS**

NOTARIO SEXTO (E) DEL CIRCULO DE BOGOTA

Comparecieron:

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quien (es) exhibió(eron) la(s) C.C.

[Redacted signature area]

y declaró(aron) que la(s) firma(s) que aparece(n) en el presente documento es(son) la(s) suya(s) y que el contenido del mismo es cierto. En constancia se firma esta diligencia.

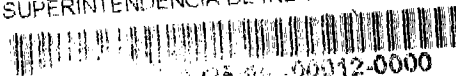
Gustavo Tamayo Arango
GUSTAVO TAMAYO ARANGO

C.C. No. 79.152.549 de Usaquén



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SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO



44.001.2.025.30-00012-0000
Dep 2020 NUECREACIONE
cve 1 REGDEPOSITO
Folios: 15

SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO

NIT : 800174081-2

RECIBO OFICIAL DE CAJA : 07 - 55,885
FECHA : JULIO 10 DE 2007

***** CONSIGNACION *****

DEPOSITANTE	TIPO PAGO	BANCO	CUENTA	No. PAGO	FECHA PGO	Vr. PAGO
LLOREDA Y CIA S. A	CONSIGNACION	BANCO POPULAR	030-00110-6	55092741	10/07/2007	1,773,000.00

***** CONCEPTO *****

CANT.	RENTISTICO	CONCEPTO	TOTAL CONCEPTO
1	50005-01-03	CAMBIO DE MODALIDAD Y MODIFICA	
		12 MARGAS Y LEMAS COMERCIALES	99,000.00
		TOTAL :	\$ 99,000.00

SON: NOVENTA Y NUEVE MIL PESOS

RESPONSABLE :

RECIBO DE CAJA APLICADO AL EXPEDIENTE No.

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53%. En este caso, el tiempo de secado fue de alrededor de 4 minutos a una temperatura media de secado de 147°C. Los trozos secos resultantes tenían una percepción grasienta muy ligera y unas dimensiones medias de 18mm por 12mm por 25mm. Estos fueron envasados y sellados en una bolsa plástica retorrible sin añadir más humedad o aceite. Cuando el material fue observado a través del paquete transparente a la semana después, fue visible un carácter oleaginoso en los trozos.

REIVINDICACIONES

1. Un alimento para mascotas, CARACTERIZADO porque comprende un cuerpo gelificable térmicamente, formulado, comestible, que comprende al menos 20% en peso de proteína, que tiene una apariencia quemado, un contenido de humedad de 20% hasta 60% en peso, un contenido de lípidos de 15% a 25% en peso y una estructura que provee firmeza de textura para ser resiliente bajo la presión inicial de la mordida por una mascota animal, en donde el cuerpo es capaz de extruir un jugo grasoso cuando es sometido a una presión baja.

2. Un alimento para mascotas de acuerdo con la reivindicación 1, CARACTERIZADO porque el cuerpo tiene una superficie no uniforme.

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3. Un alimento para mascotas de acuerdo con la reivindicación 1 ó 2, CARACTERIZADO porque el cuerpo tiene un elevado buen sabor atribuible a la reacción del tostado.

4. Un alimento para mascotas de acuerdo con cualquiera de las reivindicaciones precedentes, CARACTERIZADO porque la estructura es en capas.

5. Un alimento para mascotas de acuerdo con cualquiera de las reivindicaciones precedentes, CARACTERIZADO porque el contenido de humedad es desde 35% hasta 50% en peso.

6. Un alimento para mascotas de acuerdo con la reivindicación 5, CARACTERIZADO porque el contenido de humedad es desde 40% hasta 45% en peso.

7. Un alimento para mascotas de acuerdo con cualquiera de las reivindicaciones precedentes, CARACTERIZADO porque el cuerpo tiene una forma generalmente de bloque.

8. Un alimento para mascotas de acuerdo con cualquiera de las reivindicaciones precedentes, CARACTERIZADO porque la estructura comprende zonas interiores y exteriores, teniendo la zona exterior un menor contenido de humedad que la zona interior.

9. Un alimento para mascotas de acuerdo con la reivindicación 8, CARACTERIZADO porque la zona exterior comprende un recubrimiento acídico.

10. Un alimento para mascotas de acuerdo con cualquiera de las reivindicaciones precedentes, CARACTERIZADO porque comprende desde 20% hasta 40% en peso de proteína.

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11. Un procedimiento para producir un alimento para mascotas que tiene una textura que es resiliente bajo la presión inicial de la mordida por una mascota animal, CARACTERIZADO porque incluye los pasos de proveer un cuerpo coherente de alimento producido a partir de una fuente de proteína gelificable térmicamente, reducir el contenido de humedad del cuerpo entre 20% y 50% en peso, causando que al menos una porción del cuerpo tenga una superficie de aspecto quemado y reducir el pH del cuerpo, en donde después de la reducción del contenido de humedad el cuerpo comprende al menos 20% en peso de proteína.

12. Un procedimiento de acuerdo con la reivindicación 11, CARACTERIZADO porque la etapa de reducir la humedad es preferentemente lograda por exposición del cuerpo a calor seco.

13. Un procedimiento de acuerdo con la reivindicación 12, CARACTERIZADO porque incluye calcinar al menos dicha porción de superficie.

14. Un procedimiento de acuerdo con cualquiera de las reivindicaciones 11 a 13, CARACTERIZADO porque incluye incrementar el buen sabor del cuerpo.

15. Un procedimiento de acuerdo a la reivindicación 14, CARACTERIZADO porque incrementar el buen sabor incluye causar una reacción de dorado que ocurre en la superficie del cuerpo.

16. Un procedimiento de acuerdo con cualquiera de las reivindicaciones 11 a 15, CARACTERIZADO porque incluye recubrir el cuerpo con un ácido.

17. Un procedimiento de acuerdo con cualquiera de las reivindicaciones 11 a 16, CARACTERIZADO porque comprende incluir un azúcar en el cuerpo.

18. Un procedimiento de acuerdo con cualquiera de las reivindicaciones 11 a 17, CARACTERIZADO porque incluye la formación de una emulsión de carne.

quemadura o carbonización.

En las modalidades preferidas de la presente invención, los trozos secos, preferentemente, comprenden aproximadamente 10% en peso o menos, de almidón; alrededor de 20% a alrededor de 40% en peso de proteínas; alrededor de 15% a alrededor de 25% en peso de lípidos; y alrededor de 30% a alrededor de 40% en peso de humedad. Si los ingredientes adicionales -además de los componentes de recubrimiento discutidos anteriormente- como sales, azúcares, especias, condimentos, agentes saborizantes, minerales, y otros semejantes, son incluidos en los trozos secos, entonces estos ingredientes adicionales, preferentemente, forman alrededor de 0,5% a alrededor de 15% en peso de los trozos.

Una ventaja de la presente invención es que la estructura del cuerpo alimenticio, es provista de una humedad menor y de una textura más firme -especialmente en la superficie, en un trozo de tamaño relativamente grande, lo que induce a la mascota, ya sea gato o perro o algún otro semejante, a ocupar más tiempo masticándola, con lo que se le provee de un ejercicio de la mandíbula muy beneficioso.

En el caso de perros medianos a grandes, se ha encontrado que los trozos, preferentemente, deberían estar dentro de los siguientes límites de tamaño: la dimensión lateral más pequeña desde 8 mm a 12 mm y la más larga desde 16 mm a alrededor de 25 mm. Sin embargo, es conveniente considerar las dimensiones en términos de un diámetro

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The fried pieces may also be coated with flavoring agents. Suitable flavoring agents include digests of animal matter, amino acids such as glycine, fats such as tallow, and the like.

5 Preferably, the pH of the pieces is reduced. Typically the reduction is from a pH in the range from 6.0 to 6.5 down to a value in the range 4.0 to 5.5. The reduction is accomplished by acidifying the pieces, preferably by applying an acidic coating to them. A food grade acid, for example phosphoric acid, is preferably used. In a preferred embodiment, the coating comprises from 1% to 5% by weight of the coated food body.

10 Advantageously, the coating may further comprise a sugar, such as sucrose, for reaction with the acid to provide a highly palatable seared or browning effect in the coating, enhancing the browning that may already have been produced as a result of the moisture reduction step. However, the sugar may in addition or alternatively be included in the initial protein-rich formulation prior to the gelling stage, or be added at any convenient later stage.

15 The fried pieces may then be packed into suitable containers, in particular sealable cans and pouches. In this form, the fried pieces are particularly suited for feeding to pets as a complete meal or part of a meal. Alternatively, the fried pieces may even be fed as treats.

20 Preferably, the pieces are closely packed in the containers and no additional water or other liquid, such as gravy, is added. Once sealed, the containers may be sterilized by retorting. The heat of sterilization promotes reaction of the acid with sugars in the fried, protein rich body. The result of this reaction is seen in a dark non-uniform surface effect on the pieces, akin to searing or charring.

25 In preferred embodiments of the invention, the fried pieces preferably comprise about 10% or less by weight of starch; about 20% to about 40% by weight of protein; about 15% to about 25% by weight of lipid; and about 30% to about 40% by weight of moisture. If additional ingredients - in addition to the coating components discussed above - such as salts, sugars, spices, seasonings, flavoring agents, minerals, and the like are included in the fried pieces, these additional ingredients preferably make up about 30 0.5% to about 15% by weight of the fried pieces.



Europäisches Patentamt
European Patent Office
Office européen des brevets



(11) EP 1 267 636 B1

(12)

EUROPEAN PATENT SPECIFICATION

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PCT/IB2001/000463

(22) Date of filing: 21.03.2001

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WO 2001/070045 (27.09.2001 Gazette 2001/39)

(54) PET FOOD COMPOSITION AND METHOD OF MANUFACTURE

HAUSTIERFUTTERZUSAMMENSETZUNG UND VERFAHREN ZU DEREN HERSTELLUNG

COMPOSITION D'ALIMENT POUR ANIMAUX DE COMPAGNIE ET PROCEDE DE PREPARATION
ASSOCIE

(84) Designated Contracting States:
AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU
MC NL PT SE TR

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(73) Proprietor: Société des Produits Nestlé S.A.
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(56) References cited:
EP-A- 0 258 037 WO-A-00/53031
US-A- 3 873 736 US-A- 3 930 031
US-A- 4 910 038 US-A- 5 731 029

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Note: Within nine months from the publication of the mention of the grant of the European patent, any person may give notice to the European Patent Office of opposition to the European patent granted. Notice of opposition shall be filed in a written reasoned statement. It shall not be deemed to have been filed until the opposition fee has been paid. (Art. 99(1) European Patent Convention).

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bient temperature, the can was opened and the contents examined.

[0057] The fried and coated pieces were observed to have a randomised or at least non-uniform browned surface, appearing more charred than after the earlier pre-canning frying stage. The pieces had a greasy feel and, on being lightly pressed, exuded fatty juices.

Example 2

[0068] A base mix for producing a thermally gellable mixture is prepared from meat protein, wheat gluten, defatted soy flour, other ingredients and water in the following proportions by weight:

- 65.0% Meats
- 18% Wheat
- 7.0% Soy Flour
- 5% Water
- 3.0% Other (minerals, sugars, vitamins, flavors, etc.)

[0069] The thermally gellable mixture is run through an emulsion mill (a Trigonal Mill obtained from Siefel Maschinenfabrik GmbH & Co KG). The heated mixture leaves the emulsion mill at a temperature of about 112°C and is discharged into a holding tube. The residence time in the holding tube is about 5 minutes. The product leaving the holding tube is in a gelled form and is cut into pieces about 8mm in length. The pieces have a striated, meat-like appearance.

[0070] The pieces are sieved to remove fines. The moisture content of the pieces is about 56% by weight. The pieces are then transferred to a high velocity, hot air dryer in which they are dried at a temperature of 165°C for about 6 minutes. The dried pieces puff slightly due to steam release during hot air drying but retain the striated, meat-like appearance and have pH of 6.

[0071] The composition of the pieces after drying was determined to be as follows (weight %):

- 33% Protein
- 20% Fat
- 39% Moisture
- 2% sugars, in particular sucrose or glucose
- 4% ash

[0072] The dried pieces were then transferred to a coating apparatus. Water, food grade phosphoric acid, flavoring agents, and edible food grade vegetable oil (optional) were then coated on the pieces over a time of about 90 seconds, the phosphoric acid making up about 2.0% of the total mass of the coated product pieces, and the vegetable oil making up approximately 7% of the total mass. The coated pieces were found to have a moisture content of about 40% by weight and a pH of 4.5. The coated pieces had a firm yet resilient texture.

[0073] Finally, the pieces were packed in to a sealable can without any gravy or water being added. The can

was sealed and retorted. After allowing it to cool to ambient temperature, the can was opened and the contents examined.

[0074] The dried and coated pieces were observed to have a randomised or at least non-uniform browned surface, appearing more charred than after the earlier pre-canning drying stage. The pieces had a very slight oily feel and, on being lightly pressed, exuded fatty juices.

Example 3

[0075] Pieces were produced from a starting formulation and using the process as described in example 1. However, drying was carried out in a hot air dryer as described in example 2 and conditions were adjusted to provide final dried pieces with a moisture content of 28%. In this case, drying time was about 10 minutes with mean dryer temperature at about 178°C. The dried pieces retain their predrying striated, meat-like appearance and have pH of 6. They had a slightly oily feel. Approximate average dimensions of the pieces were length and width 10mm and depth 20mm.

Example 4

[0076] Pieces were produced from a starting formulation and using the process as described in example 2. However, the drying conditions were adjusted to provide final dried pieces with a moisture content of 53%. In this case, drying time was about 4 minutes with mean dryer temperature at about 147°C. The resultant dried pieces and a very slightly greasy feel and average dimensions of 15mm by 12mm by 25mm. They were packaged and sealed in a retortable plastic pouch without adding further moisture or oil. When viewed through the transparent package material a week later, oiliness was visible on the pieces.

Claims

1. A pet food comprising an edible, formulated, thermally gelled body comprising at least 20% protein by weight having a seared appearance, a moisture content of 20% to 60% by weight, a lipid content of 15% to 25% by weight and a structure providing firmness of texture to be resilient under initial pressure of biting by a pet animal, wherein the body is capable of exuding a fatty juice when subjected to light pressure.
2. A pet food according to claim 1 wherein the body has a non-uniform surface.
3. A pet food according to claim 1 or claim 2 wherein the body has high palatability, attributable to a browning reaction.

4. A pet food according to any one of the preceding claims wherein the structure is layered.
5. A pet food according to any one of the preceding claims wherein the moisture content is from 35% to 50% by weight.
6. A pet food according to claim 5 wherein the moisture content is from 40% to 45% by weight.
7. A pet food according to any one of the preceding claims having a generally blocky shape.
8. A pet food according to any one of the preceding claims wherein the structure comprises interior and exterior zones, the exterior zone having lower moisture content than the interior zone.
9. A pet food according to claim 8 wherein the exterior zone comprises an acidic coating.
10. A pet food according to any one of the preceding claims comprising from 20% to 40% weight protein.
11. A process for producing a pet food having a texture that is resilient under initial pressure of biting by a pet animal, including the steps of providing a coherent body of food produced from a thermally gellable protein source, reducing moisture content of the body to between 20% and 50% by weight, causing at least a portion of the body to have a seared-looking surface and reducing the pH of the body, wherein after reduction of the moisture content the body comprises at least 20% protein by weight.
12. A process according to claim 11 wherein the step of reducing moisture is preferably accomplished by exposing the body to dry heat.
13. A process according to claim 12 including charring at least said surface portion.
14. A process according to any one of claims 11 to 13 including enhancing the palatability of the body.
15. A process according to claim 14 wherein enhancing the palatability includes causing a browning reaction to take place at the surface of the body.
16. A process according to any one of claims 11 to 15 including coating the body with an acid.
17. A process according to any one of claims 11 to 16 comprising including a sugar in the body.
18. A process according to any one of claims 11 to 17 comprising forming a meat emulsion.

19. A pet food product comprising a sealed container, a plurality of edible, formulated, thermally gelled bodies within the container, said bodies comprising at least 20% protein by weight, having a browned appearance, a moisture content of 20% to 60% by weight, a lipid content of 15% to 25% by weight and a structure providing firmness of texture to be resilient under initial pressure of biting by a pet animal.
20. A pet food product according to claim 19 wherein the browned appearance is produced by exposure of the body to a source of dry heat.
21. A pet food product according to claim 19 or claim 20 wherein the bodies are tightly contained in said container.
22. A pet food product according to any one of claims 19 to 21 containing no added water or gravy.
23. A pet food product according to any one of claims 19 to 22 wherein the bodies have an acidic coating.
24. A pet food product according to claim 19 having a moisture content of 30% to 45% by weight, the moisture having been reduced by exposure of the body to a source of dry heat, and a protein content of 20% to 40% by weight and wherein, the bodies have an acidic coating with a seared appearance.
25. A pet food product according to claim 19 comprising a moisture content of 35% to 50% by weight, the moisture having been reduced by exposure of the bodies to a source of dry heat and a protein content of 20% to 40% by weight, the bodies being capable of exuding fatty juice when subjected to light pressure.

Patentansprüche

1. Haustierfutter, welches einen essbaren, formulierten und thermisch gelierten Körper enthält, welcher umfasst, mindestens 20 Gew.-% Protein mit einem ausgetrockneten Erscheinungsbild, einem Feuchtigkeitsgehalt von 20 % bis 60 Gew.-%, einen Lipidgehalt von 15 % bis 25 Gew.-% und einer Struktur, welche der Textur eine Festigkeit verleiht, so dass sie unter dem anfänglichen Druck eines Bisses durch ein Haustier fadernd ist, worin der Körper fetigen Saft absondern kann, wenn er einem leichten Druck ausgesetzt wird.
2. Haustierfutter nach Anspruch 1, worin der Körper eine nicht einheitliche Fläche aufweist.
3. Haustierfutter nach Anspruch 1 oder Anspruch 2, worin der Körper eine hohe Schmackhaftigkeit auf-

United States Patent [19]

Palmer et al.

[11] 3,873,736

[45] Mar. 25, 1975

[54] SEMI-MOIST MEAT RESEMBLING FOOD PRODUCT AND METHOD OF PREPARATION

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[30] Foreign Application Priority Data

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[52] U.S. Cl. **426/92, 426/241, 426/249,
426/250, 426/328, 426/332, 426/364, 426/802**

[51] Int. Cl. **A23I 1/31, A23J 3/00**

[58] Field of Search **99/14, 17, 18, 20, 108,
99/2 R, 157; 426/104, 332, 241, 249, 92,
151, 250, 328, 331, 364, 802**

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[57]

ABSTRACT

The invention relates to a semi-moist protein food product of meaty and other materials having an elastic texture resembling that of natural meat. The product of the invention contains the water-soluble substances necessary to stabilize moist foods against microbiological spoilage and sufficient heat-coagulated protein, preferably wheat gluten, to confer the desired solidity and elasticity on the product. The product can be made by adding a heat-coagulable protein to a mix of pasteurised meats and water-soluble substances and then raising the temperature to coagulate the protein and form a solid product. The product can be cut into chunks while hot and retains its integrity, and can be sprayed or coated with oils or stabilized solutions of flavourings, humectants or antimycotics.

15 Claims, No Drawings

SEMI-MOIST MEAT RESEMBLING FOOD PRODUCT AND METHOD OF PREPARATION

The present invention relates to food products containing meat or meat by-products or other proteinaceous material and having a relatively soft, moist character. It relates more especially to such products which are suitable for feeding to animals, notably domestic pets.

It is known to prepare so-called "semi-moist" or "soft-moist" food products which comprise meaty materials and have moisture contents lying between those of dry foods and canned foods, by which latter is here meant wet meat containing foods which require canning for their preservation. Typical moisture contents for such foods are from 20 to 25% by weight and the products are preserved from bacterial attack by the inclusion of sufficient water-soluble material to exert a bacteriostatic effect. A typical water-soluble material used for this purpose is sugar which may be present in an amount of between 15 and 35% of the total weight of the food. One example of such a product is described in British patent specification No. 1,043,585.

Such known semi-moist products commonly resemble minced meat or hamburgers in appearance and texture and do not possess the coherent, elastic, soft texture of raw meat. Furthermore, although it is known that products of high moisture content have enhanced animal acceptance (that is they are more readily eaten by the appropriate animal), known semi-moist products have been formulated with relatively low moisture contents since at higher moisture levels the products have been too soft and incapable of retaining their shape.

Semi-moist compositions have been proposed in which cold-setting materials are incorporated to give products which are more solid when cold. In British patent specification No. 1,143,373 a marbled meat animal food is described which comprises red and white semi-moist portions, separately formed by cooking-extrusion, the white portion being randomly distributed in the red and the red portion or both portions containing 7.5 to 25% sodium caseinate, to cause tackiness at temperatures above 120° F (49° C), and 0.5 to 10% starch. In British patent specification No. 1,217,662 it is proposed to prepare an animal food by adding at least 5% ungelatinised starch to a pasteurised meat slurry, adding stabilising solutes acidifying to a pH less than 6.0, subjecting the mixture to heat and agitation to gelatinise the starch and extruding and cooling the composition. In both these foods the effect of the caseinate and the starch respectively is to increase the solidity of the cold product, but at elevated temperatures they provide a viscous or tacky and extrudable material. Even when cold, the behaviour under deformation of products containing starch is generally plastic or brittle rather than elastic, and in this they depart from the properties expected from natural meat.

In accordance with the present invention, a food product comprises a meaty or other edible proteinaceous material, a moisture content lying between the respective moisture contents of dry foods and canned foods, and sufficient water-soluble material to exert a bacteriostatic effect together with sufficient heat coagulated edible protein to confer a coherent elastic texture on the product. It is typical of this product that it

achieves and retains its elastic properties at elevated temperatures.

The water-soluble materials exert a bacteriostatic effect by reducing the "water activity" of the product as defined by the equation $a_w = P/P_0$ where P is the vapour pressure of water in the product and P_0 is the vapour pressure of pure water at the same temperature. It is preferred that the water activity of the product should be in the range 0.65 to 0.85. Suitable water-soluble compounds include sugars, polyhydric alcohols, salts and acids. The preferred water-soluble materials are dextrose monohydrate, propylene glycol, sucrose, glycerol, sorbitol and sodium chloride. It is also preferred that an antimycotic should be included to suppress mould and fungal growth. Any antimycotic which is edible at the concentration employed may be used, but a combination of propylene glycol and potassium sorbate is preferred. The potassium sorbate may be present between 0.1 and 1.0% and propylene glycol at 0 to 18%, the preferred combination being 0.3% potassium sorbate, 3.0% propylene glycol.

The use of antimycotics can be avoided if the finished product is pasteurised, for example by irradiation, either after packing or before packing, where the packaging operations are carried out under mould-free conditions and with sterile packaging materials. Alternatively, a product without antimycotic may be pasteurised by heating the surface of the product in the packaged condition to a sufficient temperature to kill moulds and yeasts. When pasteurising in this way, we have found it desirable to have a solution of polyhydric alcohols and salts present to absorb and diffuse any water vapour generated by the heating process and which otherwise might condense to form localised areas of high water activity on the surface of the solid product.

By use of heat-coagulable protein, semi-moist products can be obtained which have a coherent, elastic, soft texture similar to that of raw meat. Furthermore, it has already been found possible to produce firm textured products having higher moisture levels than previously employed. Useful products are obtained with a moisture content from 15 up to 45%. The preferred moisture content is 30% but can vary in dependence upon the levels of soluble sugars, polyhydric alcohols and salts employed to depress the water activity. The pH value of the product may range between 4.4 and 8.0 but the preferred pH is 6.0 to 6.5.

Suitable heat-coagulable proteins are proteins which on heating in aqueous conditions are coagulated to a coherent elastic condition. Such proteins provide a tough elastic matrix in the product, especially where the product pH is 5.5 to 6.5. Especially preferred is vital wheat gluten, but other examples are dry blood plasma, soya protein isolate and egg albumen. The amount of coagulable protein employed may vary between 3 and 40% of the total weight of the product. The preferred concentration varies with the particular protein employed. For example, the preferred level of vital wheat gluten is 25 to 35% by weight.

The invention also provides a process for the production of a proteinaceous food product in which meaty or other proteinaceous materials and sufficient water-soluble substances to exert a bacteriostatic effect in the finished product are pasteurised, whereafter the heat-coagulable protein is added at a temperature below that at which it coagulates and the resulting mixture is

then heated to coagulate the protein. Other desired ingredients may be added after pasturisation and before incorporation of the coagulable protein. These ingredients may be added together in the form of a solution and may include humectants, dyes, anti-oxidants and nutrient substances such as skimmed milk powder, minerals and vitamins. After the protein binding agent, for example dry vital wheat gluten, has been mixed vigorously with the other ingredients, the resulting dough is coagulated by heat, for example by spreading on to a tray and baking in a gas oven. Baking may be at any temperature from 45° to 235° C, for times between 1 and 60 minutes, but the preferred baking conditions are 130° to 150° C for 5 to 20 minutes. Other methods of heat coagulation may also be employed, such as microwave heating and extrusion cooking processes.

A dough including the coagulable protein may be stretched and then allowed to relax before baking, whereby a crinkled meat-like surface is produced. A further modification is the preparation of mixes of different colours, for example a red of "lean" coloured mix and a white of "fat" coloured mix, layers of the different coloured mixes being placed together before baking so that after coagulation of the protein the product has the appearance of muscle meat containing layers of fat.

A suitable pasteurising temperature is about 100° C and the mix is preferably allowed to fall to about 70° C before the coagulable protein is added. Where layers of different coloured mixes are to be brought together before baking, this may be done at any temperature from 20° to 85°, depending on the formulation of the different mixes, but will usually be about 50° C.

The possibility of stretching mixes containing heat-coagulable protein binders such as vital wheat gluten, so as to obtain distinctive textures in the product, represents a further advantage of the use of such binders. The mix before coagulation is soft and can readily be rolled and stretched. Such stretching gives a surface of the finished product of fine crinkled appearance closely resembling the cut muscle bundle appearance of sliced muscle meat. A similar effect may be obtained by subjecting partially heat-coagulated chunks of the product to microwave heating, when the chunks rapidly expand, for example to approximately double their original size, and at the end of the microwave energy application contract back to leave the desired crinkled surface appearance.

The final density of the product may be varied by altering the baking conditions employed. At lower temperatures a high density product with an elastic texture similar to that of raw muscle meat is obtained, whilst at higher temperatures an aerated product with the low density typical of lung may be produced. Intermediate effects may be obtained at temperatures between these extremes.

After the heat-coagulated product has been cooled, the resultant stable product may be presented much in the manner of pieces of meat for the user to cut or slice before feeding, for example, to a pet animal. Alternatively, the product may be cut or minced into pieces, preferably before cooling so as to avoid the clean, sharp edges obtained when the cold product is cut. Although it is desirable to cut or mince the product at above room temperature, this has the disadvantage that at the higher temperature the stickiness of the pieces is increased. To reduce stickiness and prevent the pieces

from adhering to one another the product chunks may be sprayed with a thin film of arachis oil or similar edible oil or fat. If instead of heat-coagulable proteins, as provided for in this invention, cold-setting binding materials were to be included in the formulation, the product would be thermoplastic or liquid and sticky, and such cutting, slicing or mincing of the product while hot would be quite impossible.

Treatment of the cut pieces with edible oil or a stabilised aqueous solution also gives the product a moist, juicy surface appearance and improves pet animal acceptance. The stabilised solution may consist of humectants, for example polyhydric alcohols such as propylene glycol or glycerol, and water together with antimicrobials such as potassium sorbate. It has been found that this solution is absorbed into the product chunks on storage at room temperature and that this also helps prevent the pieces from sticking together and creates a moist, juicy surface appearance. It is particularly advantageous to add flavouring materials to the stabilised solution since the flavour concentrates at the product surface and increases animal acceptance. The flavouring materials used may be comprised of meat extracts, protein hydrolysates and amino acid/sugar mixtures.

The oil used to coat the product is preferably arachis oil but may be any edible oil. The oil may be thickened, for example by the addition of aluminum stearate, to prevent the oil from separating from the chunks after spraying.

The stabilised solution, which may be added to the product in any proportion up to 30% solution: 70% product, preferably consists of glycerol, propylene glycol, salt, potassium sorbate and water at such levels as to give a water activity of 0.75 to 0.85. The solution may contain thickeners, such as starch or guar gum, and colouring agents, such as caramel, when a cooked meat gravy appearance is required, and colouring agents such as red dyestuffs or canthaxanthin when a blood-like liquid is required. Alternatively the solution may contain gelatin agents such as agar where a meat-in-jelly appearance is required.

In the present preferred method of producing the food product of this invention, finely comminuted meats and meat offals such as maws, tripe or liver are heated in the presence of sugars, such as dextrose, and/or polyhydric alcohols, such as glycerol, to 95°-100° C for 15 minutes in order to effect pasteurisation. A solution containing dyestuffs, humectants, such as propylene glycol, and anti-oxidants, such as butylated hydroxyanisole, is then mixed in, and this is followed by the addition of minerals, vitamins and such nutrients as skimmed milk powder. The mix temperature is preferably but not essentially allowed to fall to 70° C and the heat-coagulable binder, such as vital wheat gluten, blood plasma, soya protein isolate or egg albumen, are thoroughly mixed in. A mass of such a mixture coloured red or brown is rolled into a 1-inch thick slab with the random addition of layers of a mixture of similar formulation having the colour of white fat. The preferred ratio of meat mass : fat mass is about 92½:7½. The slab is baked at 140° C for 15 minutes and after cooling to about 30° C is cut into ½ to ¾-inch chunks and sprayed with a coating of arachis oil to the extent of 1% of the product. The product is heat-sealed into nylonpolypropylene pouches.

The following are specific examples of the production of food products according to the invention.

EXAMPLE 1

1.	Dextrose monohydrate	25.0%
2.	Pigs' maws (2 mm plate)	38.0%
3.	Glycerol	3.0%
4.	Propylene glycol	3.0%
5.	Butylated hydroxyanisole	0.001%
6.	2% Chocolate brown HTS solution	0.48%
7.	2% Red 2GS solution	0.11%
8.	2% Red 6B	0.08%
9.	Skimmed milk powder	1.7%
10.	Dicalcium phosphate	2.0%
11.	Salt	1.3%
12.	Potassium sorbate	0.3%
13.	Vitamin mix	0.15%
14.	Mineral concentrate	0.05%
15.	Vital wheat gluten	25.0%

The product was prepared by mixing ingredients 1 and 2 together and heating by indirect steam to 95°-100° C for 15 minutes. Loss in weight was made good by addition of water at the end of this period. Ingredients 3-8 were mixed and added, followed by ingredients 9-14 which had been sieved and mixed prior to addition. The temperature of the mix was allowed to fall to 70° C and then the vital wheat gluten was rapidly mixed in. Twenty pounds of this dough-like mix was rolled out into a 1-inch layer with 1.6 pounds of a fat coloured dough prepared to a similar formula to that above except that dyestuffs (6, 7 and 8) were replaced by 0.025% of a 2% solution of Sunset Yellow Thin strips of the fat-coloured dough were rolled in.

The product was baked at 140° C for 15 minutes in a gas oven and allowed to cool almost to room temperature before being cut into ½ to ¾-inch chunks and sprayed with arachis oil at 1% of the total product weight.

The product was found to contain 33.0% moisture and to have a water activity of 0.85. Its acceptance by dogs was found to be high in relation to soft moist products of lower moisture content and its appearance and feel was judged to be very similar to that of raw muscle meat. When heat-sealed into plastic pouches of low water vapour transmission it had an extended storage life.

EXAMPLE 2

1.	Pigs' maws	46.8%
2.	Glycerol	16.0%
3.	Propylene glycol	1.2%
4.	Butylated hydroxyanisole	0.001%
5.	2% Chocolate brown HTS solution	0.48%
6.	2% Red 2GS solution	0.11%
7.	2% Red 6B solution	0.08%
8.	Dicalcium phosphate	3.2%
9.	Salt	1.1%
10.	Potassium sorbate	0.3%
11.	Vitamin mix	0.15%
12.	Mineral concentrate	0.05%
13.	Blood plasma	5.3%
14.	Vital wheat gluten	25.5%

The product was prepared in a similar manner to that described in Example 1, except that the glycerol and maws were indirect steam-heated together in a covered vessel to the boiling point and held at this temperature for 15 minutes, and that the blood plasma and vital wheat gluten were added together to the mix when the mix temperature had reached 70° C. The moisture con-

tent of the product was 38.0% and its water activity 0.84.

Chunks of the product readily retained their shape and identity when handled but had the soft, coherent, elastic texture and moist appearance of raw muscle meat, containing bands of soft, rather translucent fat-like material. The product was found to be highly palatable to pet animals and to be closely associated with real meat by the owners of the pets.

EXAMPLE 3

1.	Dextrose monohydrate	24.0%
2.	Maws	28.5%
3.	Beef dripping	2.0%
4.	Propylene glycol	3.0%
5.	Chocolate brown HTS (2% solution)	0.45%
6.	Red 2GS (2% solution)	0.10%
7.	Red 6B (2% solution)	0.075%
8.	Butylated hydroxyanisole	0.001%
9.	Skimmed milk powder	5.0%
10.	Dicalcium phosphate	3.0%
11.	Sorbitol	3.0%
12.	Salt	1.0%
13.	Potassium sorbate	0.3%
14.	Vital wheat gluten	30.0%

The product was prepared according to Example 1 except that no oil was added to the chunks of finished product. The chunks were filled into clear plastic pouches along with a moisturising solution in the ratio of 8 parts chunks to 2 parts solution, and the pouches were then heat-sealed. The moisturising solution was comprised of:

53%	Glycerol
2%	Propylene glycol
1%	Salt
0.3%	Potassium sorbate
43.7%	Water

On standing overnight the cubes were found to have absorbed half of the added solution and after 1 week the majority of the solution had been absorbed. The resultant product had the soft, moist, juicy appearance and texture of raw muscle meat.

EXAMPLE 4

1.	Dextrose monohydrate	21.0%
2.	Pigs' maws	24.9%
3.	Beef dripping	14.5%
4.	Propylene glycol	2.6%
5.	Butylated hydroxyanisole	0.001%
6.	Chocolate brown HTS (2% solution)	0.39%
7.	Red 2GS (2% solution)	0.09%
8.	Red 6B (2% solution)	0.07%
9.	Skimmed milk powder	4.4%
10.	Dicalcium phosphate	2.3%
11.	Sorbitol	2.6%
12.	Salt	0.9%
13.	Potassium sorbate	0.25%
14.	Vitamin mix	0.12%
15.	Mineral supplement	0.04%
16.	Orthophosphoric acid	0.3%
17.	Vital wheat gluten	25.5%

The product was prepared as described in Example 1 except that the melted beef dripping and the phosphoric acid was added to the mix immediately prior to the gluten addition, no fat-coloured dough was added to the meat-coloured dough and no oil was added to the finished product chunks on packing. The product had a texture and appearance approaching that of corned

beef, but on account of its relatively acid condition (pH about 5.5) it is of less marked elasticity than the product of the other Examples.

EXAMPLE 5

1.	Pigs' maws	28.5%
2.	Dextrose monohydrate	24.0%
3.	Beef dripping	2.0%
4.	Propylene glycol	3.0%
5.	Butylated hydroxyanisole	0.001%
6.	Skimmed milk powder	4.4%
7.	Dried red blood cells	1.0%
8.	Dicalcium phosphate	3.0%
9.	Sorbitol	3.0%
10.	Salt	1.0%
11.	Potassium sorbate	0.3%
12.	Vital wheat gluten	30.0%

The mix was prepared as described in Example 1 except that the product was baked at 220° C for 30 minutes, when the product expanded to about double its original size. After cutting into ½ to ¾-inch chunks the product was packed into nylon polypropylene pouches with a gravy of the following composition:

50%	Glycerol
3%	Propylene glycol
1%	Salt
0.3%	Potassium sorbate
0.5%	Sodium carboxymethyl cellulose
0.5%	Caramel
1.0%	Flavouring
	Water
9.7%	
4.0%	Arachis oil

The gravy: chunk ratio employed was 20 : 80.

The finished product chunks had a low density similar to that of lung and a fibrous internal texture. Overall the product resembled cooked fibrous meat in a meat gravy.

We claim:

1. A food product consisting essentially of a comminuted meat component; from 15 to 45% moisture; a water-soluble bacteriostatic component in a quantity sufficient to impart a water activity in the range of about 0.65 to about 0.85, and a coherent elastic matrix embedding said components and moisture comprising a heat-coagulated edible protein in an amount from about 25 to about 40% of the total weight of the product; said product having a sufficiently coherent elastic texture similar to that of raw meat for slicing into chunks.

2. A food product according to claim 1 wherein the heat coagulated protein is selected from the group consisting of coagulated wheat gluten, dry blood plasma, soya protein isolate and egg albumen.

3. A food product according to claim 1 wherein the water-soluble material is selected from the group consisting of sucrose, dextrose monohydrate, propylene glycol, glycerol, sorbitol and sodium chloride.

4. A food product according to claim 1 having a pH of 5.5 to 6.5.

5. A food product according to claim 1 in the form of cut pieces coated with at least one of an edible oil and a stabilized aqueous solution containing at least one of humectants, antimycotics and flavoring materials.

6. The food product according to claim 1 further including small quantities of additives selected from the group consisting of humectants, dyes, antimycotics, anti-oxidants, and nutrient substances.

7. A process for the production of a proteinaceous food product having a chewy elastic texture comprising the steps of: preparing a mix consisting essentially of a comminuted pasteurised meat component, moisture sufficient to provide 15 to 45% by weight moisture in the total product, and a bacteriostatic water soluble component in quantity sufficient to impart a water activity in the range of about 0.65 to 0.85; incorporating a heat-coagulable protein in said mix in an amount of about 25 to about 40% by weight of the total product at a temperature below that at which it coagulates; and heating the resulting mixture to coagulate the heat-coagulable protein to produce a coherent elastic matrix embedding said components.

8. A process according to claim 7 wherein a solution comprising at least one of humectant, dyes, antioxidants and nutrient substances is added to the pasteurised meat component.

9. A process according to claim 7 wherein the mixture is baked at a temperature from 45° to 235° C for times between 1 and 60 minutes.

10. The process according to claim 9 wherein the heat-coagulable protein is wheat gluten.

11. A process according to claim 7 including the steps of: stretching said mixture including the heat-coagulable protein; and allowing said stretched mixture to relax before heating, whereby a crinkled meat-like surface is produced.

12. A process according to claim 7 including the steps of: applying microwave heating to partially heat-coagulated chunks of said mixture containing the coagulable protein to rapidly expand the chunks; and terminating said microwave energy application and allowing said chunks to contract back to acquire a crinkled surface appearance.

13. A process according to claim 7 wherein the meat component is pasteurised at about 100°C and the temperature of said mix is allowed to fall to about 70°C before the heat-coagulable protein is added.

14. A process according to claim 7 wherein layers of different coloured mixes containing heat-coagulable protein are brought together before heating to form a layered product at a temperature from 20° to 85°C.

15. The process according to claim 7 wherein the heat-coagulable protein is wheat gluten.

* * * * *



US005928705A

United States Patent [19]
Matthews et al.[11] **Patent Number:** **5,928,705**
[45] **Date of Patent:** ***Jul. 27, 1999**[54] **COOKED EXTRUDED MEAT PRODUCT
COMPRISING ADDITIVE AND METHOD
FOR MAKING THE SAME**[75] **Inventors:** **Bernard Trevor Matthews, Norwich;**
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Elwyn Roberts; David Norman
Wilson, both of Norwich; John Harry
Barker, Sheringham; Carl Richard
Reynolds, Fakenham, all of United
Kingdom[73] **Assignee:** **Bernard Matthews PLC, Norwich,**
United Kingdom[*] **Notice:** This patent issued on a continued prosecution application filed under 37 CFR 1.53(d), and is subject to the twenty year patent term provisions of 35 U.S.C. 154(a)(2).[21] **Appl. No.:** **08/636,569**[22] **Filed:** **Apr. 23, 1996**[30] **Foreign Application Priority Data**

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[51] **Int. Cl.⁶** **A23L 1/317**[52] **U.S. Cl.** **426/646; 426/90; 426/92;**
426/105; 426/516; 426/517; 426/518; 426/641[58] **Field of Search** **426/516, 517,**
426/518, 641, 646, 92, 90, 105[56] **References Cited****U.S. PATENT DOCUMENTS**

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Primary Examiner—Helen Pratt
Attorney, Agent, or Firm—Oliff & Berridge, PLC[57] **ABSTRACT**

A cooked, extruded meat product comprising a meat extrudate having an outwardly facing surface, which meat extrudate is impregnated with an additive in an additive zone which extends inwardly from the surface to a depth of at least 1 mm, typically 1–5 mm. The meat product may comprise a co-extruded layer of fat or meat emulsion disposed circumjacent the meat layer or core. Also provided is a method of making the extruded meat product.

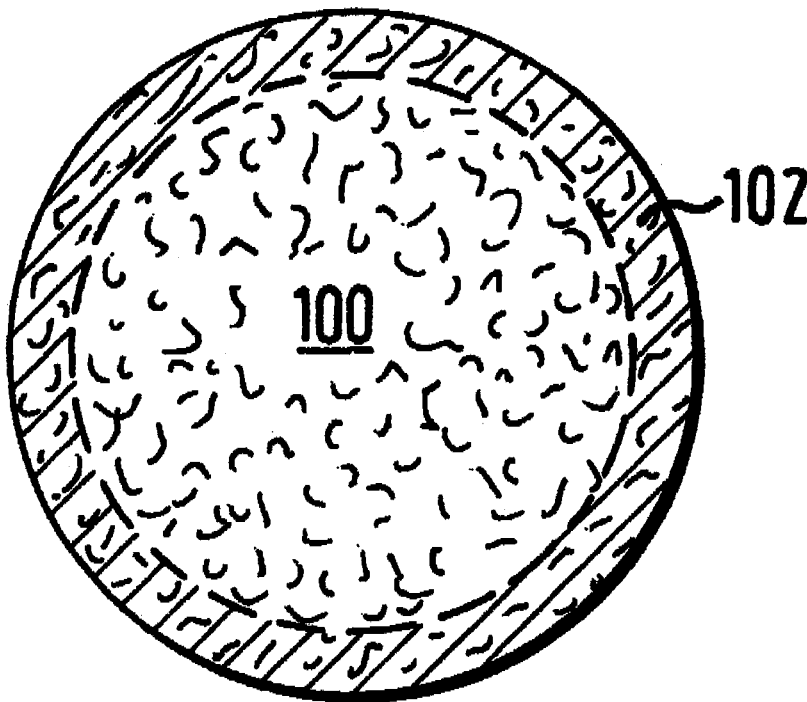
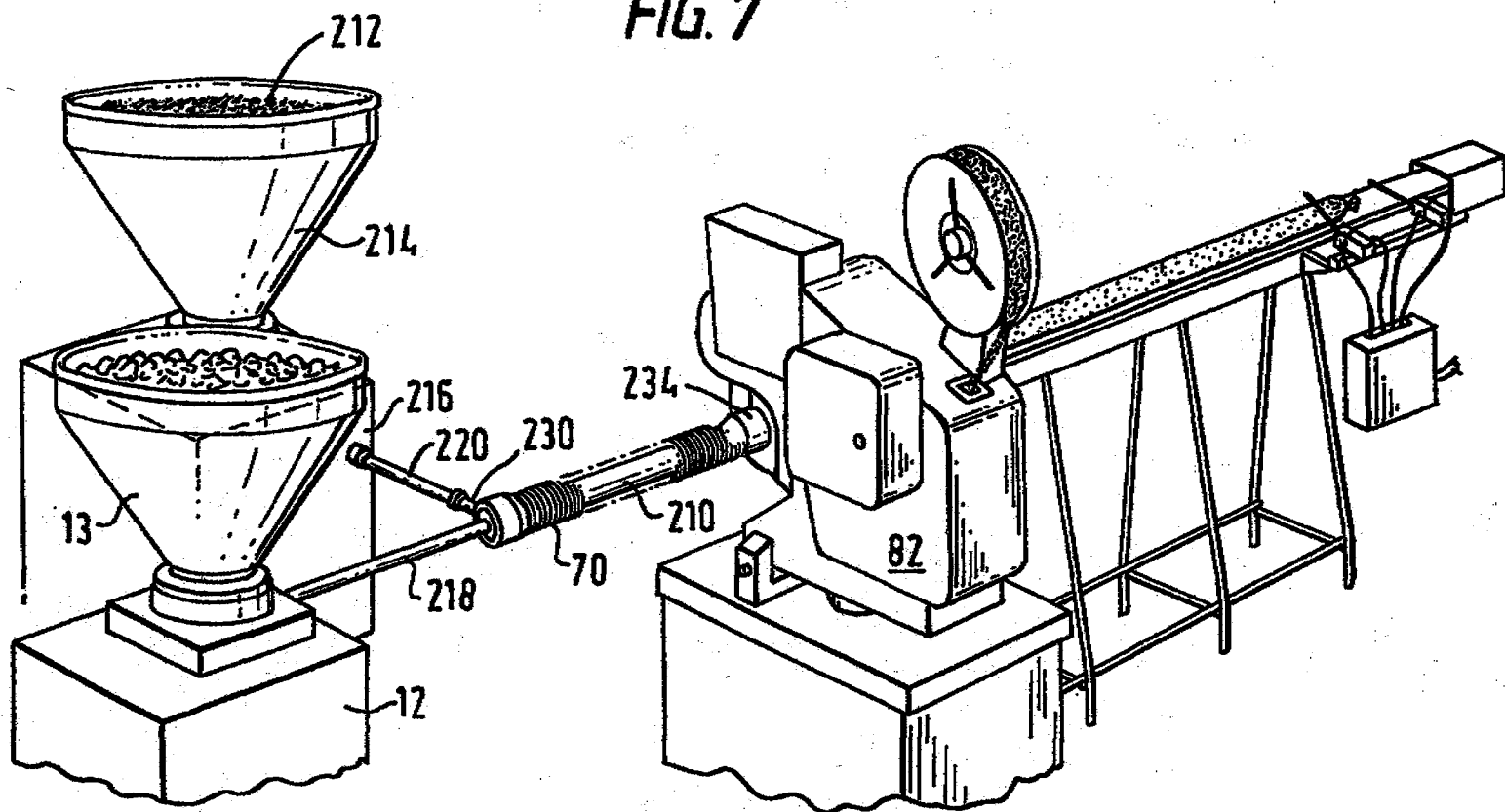
22 Claims, 7 Drawing Sheets

FIG. 7



COOKED EXTRUDED MEAT PRODUCT COMPRISING ADDITIVE AND METHOD FOR MAKING THE SAME

The present invention relates to a cooked, extruded meat product comprising an additive such, for example, as a colouring, flavouring or seasoning. The present invention also embraces methods and apparatus for making such a cooked, extruded meat product.

One prior art method for applying an additive to an extruded meat product consists in "painting" the additive in the form of a viscous syrup, by means of a pastry brush or the like, onto an outer surface of the extrudate prior to cooking. The syrup must be sufficiently viscous to remain in place on the product prior to and during cooking. Nevertheless, an amount of the syrup additive will be removed when the product comes into contact with, or rubs against other articles on the bench or in the oven. Furthermore, by using such a viscous additive, it is difficult to achieve a uniform application of the additive on the surface of the meat product.

This method also suffers from the disadvantage that the viscous additive does not penetrate substantially into the meat extrudate. The flavour thus remains concentrated on the outside of the product which is unsatisfactory from the point of view of a consumer. The viscous additive is unprotected on the outer surface of the meat product during cooking and will, to an extent, be denatured as a result of the concentration of heat on the outer surface. Furthermore, the use of the viscous syrup additive makes it difficult to automate the process.

The manual application of additive to the meat substrate is time consuming, and inevitably an amount of the additive will be lost through spillages. The process is also inefficient because the tendency is to apply too much additive to the meat product when trying to obtain complete surface coverage.

U.S. Pat. No. 4,905,587 to Smithers discloses a method for applying liquid smoke and other flavourings to sausages. The liquid smoke is applied to a meat substrate as it debouches a nozzle, and travels in contact with the meat product inside a stuffing horn prior to encasement in a flexible casing. Sufficient liquid smoke may be applied for complete coverage of the surface of the meat substrate, but substantial intermixing of the liquid smoke and meat is avoided to ensure that the liquid smoke does not penetrate the meat by more than one millimeter after the sausage is cooked. In this way the cooked sausage resembles one which has been smoked by a traditional smoking process in a smoke house.

A disadvantage which is inherent in the method disclosed by U.S. Pat. No. 4,905,587 is that the liquid smoke has to travel with the meat substrate along the entire length of the stuffing horn prior to encasement in the flexible casing. Whilst it is noted that U.S. Pat. No. 4,905,587 is concerned to provide only a thin layer of liquid smoke on the meat substrate so as to mimic the effect of traditional smoking, this means that the method of U.S. Pat. No. 4,905,587 would be unsuitable for applying greater amounts of fluid additive to the substrate, because the interaction between the meat substrate and a contiguous layer of liquid smoke of greater depth than is contemplated by U.S. Pat. No. 4,905,587, at the point of contact juxtaposed the nozzle and along the length of the stuffing horn, will inevitably lead to occasional fracturing of the meat substrate in the stuffing horn, and substantial penetration of the liquid smoke into cracks opened up between fragmented sections of the substrate.

Product affected in this way will be unusable and will therefore have to be thrown away.

Furthermore, the apparatus disclosed by U.S. Pat. No. 4,905,587 is not suitable for dispensing onto the sausage substrate liquid additives containing particulate matter such, for example, as ground seasonings, e.g. ground peppercorns.

It will further be appreciated by persons skilled in the art that it is generally undesirable in the food industry to provide such a long common path for meat substrate and liquid additive as the stuffing horn of U.S. Pat. No. 4,905,587. This apparatus will be difficult to clean between batches, and the apparatus presents a large surface area within the nozzle and stuffing horn where meat and liquid may be allowed to remain in contact for extended periods of time if the apparatus is not cleaned properly. This presents an unacceptable health risk. The length of the common meat/liquid path also means that when the liquid additive is changed between batches to provide different flavoured products, the meat remaining in the stuffing horn must be "run-through" to exhaust all of the previous flavouring to ensure that no product is produced which is contaminated with the previous flavouring. This is clearly wasteful.

The method of U.S. Pat. No. 4,905,587 also suffers from the disadvantage that it cannot be used for applying liquid smoke to co-extruded meat products, such for example as those disclosed in the present applicants' previous European patent application no. EP-A-0024790.

It is the object of the present invention to alleviate some or all of the problems recited above. In particular it is an object of the present invention to provide an improved method for applying a liquid additive to a meat substrate which is encased in a flexible casing using a stuffing horn, wherein the length of the path along which the liquid additive contacts the substrate prior to encasement is minimised. In this connection, it is a further object of the invention to provide a method of making a meat product comprising a liquid additive which is more hygienic as compared with the method disclosed by U.S. Pat. No. 4,905,587. It is yet another object of the invention to provide apparatus for such a method which is easier to clean as compared with the apparatus of U.S. Pat. No. 4,905,587. It is yet another object of the invention to provide such apparatus which enables the liquid additive to be changed between batches with little or no wastage of meat.

It is yet another object of the invention to provide a method of applying a liquid additive to a meat substrate, in which the liquid additive may contain particulate material such, for example, as ground seasonings, e.g. whole or ground peppercorns.

It is yet another object of the invention to provide a method of applying a liquid additive to a co-extruded meat product of the kind described in EP-A-0024790 which may comprise an extruded core of proteinaceous meat material and a co-extruded, contiguous layer of fat emulsion.

It is yet another object of the present invention to provide novel meat products.

According to one aspect of the present invention there is provided a cooked, extruded meat product comprising a meat extrudate having an outwardly facing surface, which meat extrudate is impregnated with an additive in an additive zone which extends inwardly from said surface to a depth of at least 1 mm.

By the term "meat" as used herein is meant the processed or unprocessed, edible parts of any animal, bird or fish which are capable of being extruded, including emulsified fat and emulsified lean meat trimmings, as well as natural or extended lean muscle meat.

Said meat extrudate may comprise a unitary extrudate of lean muscle meat. Alternatively, the extrudate may comprise an extruded core and one or more contiguous, co-extruded layers of meat which are disposed wholly or partly around the core. Said extruded core may consist of lean muscle meat, and the meat forming the contiguous layer(s) may be the same or different from the core meat. In a preferred embodiment, the extrudate may comprise a core of lean muscle meat and a circumjacent, co-extruded layer of fat emulsion or a meat emulsion comprising emulsified lean meat trimmings.

Usually the additive zone will extend inwardly from the surface of the outermost layer of meat, or the core where no other layers are present. In some embodiments however, the additive may impregnate the core or a layer which is not the outermost layer, such that the additive zone is "sandwiched" between two contiguous layers of the extrudate.

As lean muscle meat to form one or more of the core or layers of the meat extrudate, may be used natural or extended diced, sliced or comminuted lean muscle meat pieces. In a preferred embodiment whole muscle meat pieces are employed. Where one or more co-extruded meat or fat emulsion layers are provided, the fat emulsion may be as disclosed in EP-A-0024790 to the applicants. Said additive may be a flavouring, colouring or seasoning of the kind generally well known to persons skilled in the art for use in the food industry.

Typically the cooked, extruded meat product will be sliced in a direction across the axis of extrusion. Said additive zone may extend into the meat to a depth of 1 to 10 mm, typically 1 to 5 mm. The remainder of the meat substrate may remain substantially free of the additive.

In another aspect of the present invention there is provided a method of making an extruded meat product comprising pumping a meat substrate through a stuffing horn to an extrusion head and thereafter through the extrusion head into a flexible casing, characterised by applying automatically fluid additive to an outwardly facing surface of the meat substrate as it debouches from the extrusion head into the flexible casing.

Said meat substrate may be extruded through one or more generally concentric meat dispensing orifices formed in the extrusion head, and the fluid additive may be applied to the meat substrate via a fluid dispensing orifice formed in the extrusion head wholly or partly around one or more of the meat dispensing orifices.

In one embodiment, a single meat dispensing orifice may be provided for extruding a lean muscle meat substrate therethrough, e.g. whole muscle meat, and the fluid dispensing orifice may be formed circumferentially around the meat dispensing orifice for applying fluid additive to the outer surface of the meat extrudate. In another embodiment, a first meat dispensing orifice may be provided for extruding a core of whole muscle meat therethrough, a second annular meat dispensing orifice may be provided for co-extruding a contiguous layer of meat around the core, and an annular fluid dispensing orifice may be provided for applying fluid additive to the outer surface of said contiguous layer of meat. Usually, said contiguous meat layer will consist of a fat or meat emulsion.

If is further envisaged that in some embodiments, the fluid dispensing orifice may be interposed between two concentric meat dispensing orifices, such that the fluid additive is dispensed between two neighbouring co-extruded meat layers.

Where the extrusion head comprises two or more meat dispensing orifices, the stuffing horn may be equipped with

a corresponding number of generally coaxial conduits, each of which conduits is coupled with a respective one of the meat dispensing orifices. The meat(s) to form the core and layer(s) will be pumped in parallel through the conduits of the stuffing horn to the extrusion head.

In yet another aspect of the present invention there is provided a method of making a co-extruded meat product comprising co-extruding a lean muscle meat core and a contiguous fat or meat emulsion layer into a flexible casing, such that said fat or meat emulsion layer is disposed circumferentially of said core; characterised in that said fat or meat emulsion layer comprises a fluid additive.

Said extruded or co-extruded meat product may be subsequently cooked, and during the cooking process said fluid additive will penetrate into an additive zone juxtaposed the said outwardly facing surface of the meat substrate. In some embodiments sufficient fluid additive may be used that the additive permeates into the additive zone to a depth of at least 1 mm, and particularly 1-10 mm. The penetration of the fluid additive may be assisted by the denaturing of the meat at or towards said surface during the cooking process. Alternatively, the fluid additive may be applied in the form of a viscous paste which may remain substantially on the said surface during cooking. The paste may, by way of example, contain particulate seasonings such as whole or ground peppercorns. This is particularly desirable where the paste is applied to a co-extruded meat product comprising a whole muscle meat core and contiguous fat or meat emulsion outer layer.

As will be appreciated by persons skilled in the art, water may be "cooked out" of the meat product during cooking, particularly where high quality whole muscle or natural lean meat substrates containing more than 80% or 90% lean meat are used. When the fluid additive is applied to an outermost layer which comprises lean muscle meat this water may collect under the flexible casing. When the casing is stripped from the meat product, the meat product may therefore be wet, and it will be appreciated that this is undesirable in food processing plant.

Said flexible casing may be moisture impermeable. In yet another aspect of the present invention however, the flexible casing may be a moisture permeable casing such, for example, as a fibrous casing of the kind well known in the art. Such a moisture permeable casing will allow water "cooked-out" of the meat product to be removed as water vapour, so that the meat will be substantially dry when the casing is stripped away.

In the case of said co-extruded meat product, water "cooked-out" of the meat substrate may enter into said fat or meat emulsion layer. In yet another aspect of the present invention therefore, said fat or meat emulsion layer may be stabilized by the addition of a stabilizer of known kinds to maintain the integrity of the fat emulsion layer after cooking. Said stabilizer may be selected from one or more of collagenous animal, milk or vegetable proteins, emulsifiers, stabilizers, thickeners such, for example, as alginates/"gums", methylcellulose and derivatives thereof, and natural and modified starches.

Alternatively, extended lean muscle meat substrates containing 60-70% meat protein and binder, e.g. water-retaining starch, may be employed, in which case water loss from the meat substrate may be reduced.

Where such extended meat substrates are used, or a co-extruded, stabilized fat or meat emulsion layer surrounds the lean muscle meat substrate, a moisture-impermeable casing may be employed, or a fibrous casing may be used to give the meat product a characteristic surface texture or quality.

United States Patent [19]

Martin et al.

[11] Patent Number: 4,781,939

[45] Date of Patent: Nov. 1, 1988

[54] LAYERED MEAT EMULSION PRODUCT AND METHOD OF PRODUCING SAME

[75] Inventors: R. Craig Martin, Moorpark; William
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[73] Assignee: Nestec, S.A., Vevey, Switzerland

[21] Appl. No.: 82,767

[22] Filed: Aug. 11, 1987

Related U.S. Application Data

[63] Continuation-in-part of Ser. No. 923,943, Oct. 28, 1986.

[51] Int. Cl.⁴ A23L 1/31

[52] U.S. Cl. 426/646; 426/513;
426/802

[58] Field of Search 426/646, 513, 802, 486

[56] References Cited

U.S. PATENT DOCUMENTS

4,332,823 6/1982 Buemi 426/646

4,450,183 5/1984 Steinberg et al. 426/646

Primary Examiner—George Yeung

[57] ABSTRACT

A meat emulsion containing a mix of meat materials

with the emulsion having a protein to fat ratio of at least about 1.5:1 and a moisture content in the range of about 45% to 80% is processed under conditions which rapidly heat the emulsion to a temperature of above the boiling point of water at which temperature protein coagulation proceeds at a very rapid rate. The hot meat emulsion is introduced by centrifugal force into a confined holding tube in which the emulsion is retained for a relatively short period of time during which the protein coagulates to set the emulsion and provide a firm meat emulsion product, with the emulsion being maintained at a pressure greater than the vapor pressure of emulsion water. When the protein has coagulated sufficiently to form a firm emulsion, the emulsion pressure is reduced below the vapor pressure of the emulsion water so that water in the emulsion is vaporized, and pressurized steam is periodically injected into the emulsion mass to form a set meat emulsion product having a plurality of distinct emulsion layers which are bonded together. The resulting product is discharged from the holding tube in the form of discrete pieces or chunks having a distinct layered structure which simulate pieces of natural meat in texture and appearance.

21 Claims, No Drawings

D3
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LAYERED MEAT EMULSION PRODUCT AND METHOD OF PRODUCING SAME

This application is a continuation-in-part of copending patent application Ser. No. 923,943, filed Oct. 28, 1986.

BACKGROUND OF THE INVENTION

This invention relates to the production of a meat emulsion product having a layered, meat-like appearance and texture. More particularly the invention relates to a method of processing a meat emulsion under conditions which result in the production of a layered, non-expanded product in the form of chunks or pieces which simulate natural meat chunks in texture, appearance, and consistency.

Meat emulsions, which are comminuted meat products, are well known in the food industry and are widely used in the production of products such as bologna, frankfurters and other sausage products. Such meat emulsion products are prepared by mixing, chopping, and emulsifying a mixture of raw meat materials, such as lean skeletal beef and pork and meat by-products, with ice, salt, spices and curing salts in such a manner as to produce an emulsion which contains fine fat particles coated with protein dissolved from the meat ingredients. The resulting meat emulsion is then stuffed into suitable casings, which serve as processing molds, and are heated at increasing temperatures of from 55° C. to 77° C. for extended periods of time which may vary between about 1 to 8 hours or more, depending on the volume of the meat emulsion being processed. Upon such heating, the protein in the meat emulsion coagulates or sets solid and entraps the fat particles in the protein matrix thereby forming a firm meat emulsion product. Such meat emulsion products are a uniform homogeneous mass which contain no discrete particles of meat and retain the shape of the casing when set.

In recent years in order to reduce the cost of certain food products to consumers, there has been an increasing demand for chunky food products which resemble chunks or pieces of natural meat in appearance, texture and physical structure, and which may be used as a partial or complete replacement for the more expensive natural meat chunks in food products such as stews, pot pies, casseroles, canned foods and pet food products. Chunky meat products are highly desirable in both human foods and pet foods both from aesthetic quality and consumer appeal. Because of this desirability and the high ingredient cost of natural meat chunks, there is a need for replacement of such expensive natural meat chunks in foods with more economical chunky products which simulate natural meat chunks in shape, appearance and texture, and which retain their shape, appearance and texture when subjected to commercial canning and retorting procedures.

Heretofore, efforts directed to providing such simulated natural meat chunks have been directed to producing such products from vegetable protein sources using extrusion-expansion techniques. Although the products of such extrusion-expansion procedures have met with some acceptance in the food industry, their use has been limited primarily to use as meat extenders. Since such products lack the appearance and texture of natural meat they are not generally suitable for use as full substitutes for meat. Similarly, meat emulsion products pro-

duced by conventional procedures, which are in the form of a uniform, homogeneous mass, lack the structure, texture and appearance of natural meat chunks and are not suitable for use in applications in which the use of simulated natural meat chunks is desired.

SUMMARY OF THE INVENTION

The present invention provides for the production of a meat emulsion product in the form of distinct chunks or pieces having a plurality of juxtaposed, manually separable meat-like layers resembling a chunk of natural meat in appearance, texture, and consistency. The meat emulsion chunks of this invention are suitable for use as a partial or complete replacement for more expensive natural meat chunks in both human foods and animal foods, and retain their integrity and shape when subjected to commercial canning and sterilization procedures such as those required in the production of canned high moisture food products.

The meat emulsion chunks of the present invention are produced by a process which includes comminuting a mix of meat material, such as meat (including fish and poultry) and/or meat by-products, under conditions which form a meat emulsion. One or more dry proteinaceous materials may, if desired, be included in the meat emulsion to increase the protein content of the emulsion, particularly if the meat mix contains a relatively large proportion of low binding or filler meats. The meat emulsion is deaerated to remove air pockets from the emulsion, and is then comminuted under conditions which concurrently increases emulsion fineness and rapidly heats the emulsion to a temperature above the boiling point of water, and preferably between 104° C. 118° C., at which temperature coagulation and denaturing of protein in the emulsion proceeds at a very rapid rate. The hot emulsion is immediately pumped by centrifugal force from the comminuting equipment directly into a confined processing zone, such as an elongated tube, while maintaining the emulsion mix at a pressure above the vapor pressure of the mix. The emulsion is retained in the elongated tube under such pressure until the protein has coagulated to an extent to set the emulsion and form a firm emulsion product, that is, within 5 minutes and generally for between a few seconds to about 3 minutes.

Flow control means, such as a pinch valve, may be mounted in the elongated tube at or near the inlet of the tube to regulate the flow of emulsion through the tube so that the emulsion mix is maintained at the desired pressure until the emulsion has sufficiently set. Additional flow control means responsive to the pressure of the emulsion mix in the tube may be provided in the elongated tube at one or more points along the length of the tube to further assist in regulating the flow of emulsion through the tube.

When the meat emulsion has set to a degree sufficient to form a firm emulsion product, pressure at the downstream end of the set emulsion in the tube is reduced to a value below the vapor pressure of the emulsion thereby generating steam in situ in the emulsion. The presence of steam generated in the confined emulsion mass by the vaporization of water while the protein is undergoing rapid coagulation facilitates the formation of a distinct layered structure in the emulsion and serves to disrupt the emulsion mass into discrete chunks or pieces which are discharged from the tubular processing zone. Additional steam at a pressure of 0.3 to 3 Kg/cm² may be injected into the emulsion at periodic

intervals at one or more points along the length of the tube to further assist in the cyclic discharge of the emulsion from the elongated tube.

The meat emulsion chunks discharged from the elongated tube have a layered, non-expanded structure containing a plurality of distinct layers of meat emulsion bonded together, with the layers being manually separable. These meat emulsion chunks have an appearance, texture and structure closely approximating those of natural meat chunks. The layered meat emulsion pieces thus produced may be used as a partial or complete replacement for natural meat chunks in a variety of foods for human consumption or in animal foods, and may be used in foods prepared by canning and retorting operations.

DESCRIPTION OF THE INVENTION

In preparing the layered meat emulsion chunks in accordance with the method of the present invention, a mixture of natural meat materials, including both meat from mammals, fish or fowl and/or meat by-products, having the requisite quality, ingredient cost and palatability, is formulated, ground and emulsified. The meat and/or meat by-products used may be selected from a wide range of components, with the type and amount of meat material used in the formulation depending on a number of consideration such as the intended use of the product, the desired flavor of the product, palatability, cost, availability of ingredients, and the like. Both meat (i.e. skeletal tissue and non-skeletal muscle) from a variety of mammals, fowl and fish, and/or meat by-products (i.e. the non-rendered clean parts, other than meat, derived from slaughtered mammals, fowl or fish) may be used as the meat material. Thus, the term meat material as used herein is understood to refer to non-dehydrated meat and/or meat by-products, including frozen materials. If the product is intended for human consumption, any of the meats and meat by-products used in the production of conventional meat emulsion products may be used in the present invention, including meats such as whole-carcass beef and mutton, lean pork trim, beef shanks, veal, beef and pork cheek meat, and meat by-products such as lips, tripe, hearts and tongues. If the product is intended for use as a pet food product, the meat mix may contain, in addition to the meat materials described above, any of the meat by-products which are approved for use in animal foods, such as mechanically deboned beef, chicken or fish, beef and pork liver, lungs, kidney, and the like. Typically the meat material is formulated to contain a maximum of about 25%, and preferably below about 15%, by weight of fat.

Additives which are used in conventional meat emulsion products may be mixed with the meat material and included in the meat emulsion of the present invention, such as salt, spices, seasoning, sugar, and the like in amounts sufficient to provide the product with desired taste characteristics. In addition, minor amounts of other dry ingredients such as, for example, vitamins, minerals, flavors, and the like, may also be added to the meat emulsion. One or more dry proteinaceous materials, such as, for example, wheat gluten, soy flour, soy protein concentrate, soy protein isolate, egg albumin and nonfat dry milk, may also be included in the meat emulsion to improve emulsion stability and binding, impart flavor, and reduce formulation costs. The inclusion of the dry proteinaceous materials in the meat emulsion is particularly advantageous in the production

of product intended for use as a pet food, for it enables the processor to use meat materials having a protein to fat ratio and myosin to total protein ratio which would otherwise be of marginal acceptability for use in preparing meat emulsion products. If a dry proteinaceous material is included in the meat emulsion, the amount used may vary from about 5% to about 35% by weight of the emulsion, depending on such factors as the intended use of the product, the quality of meat material used in the emulsion, ingredient cost considerations, and the like. Generally, as the fat content and moisture content of the meat material used are increased, the level of dry proteinaceous material in the emulsion is increased accordingly.

While the formulation of the meat emulsion may vary widely, the emulsion, including the dry proteinaceous material, should have a protein to fat ratio sufficient to form a firm meat emulsion product upon coagulation of the protein with no sign of emulsion instability, and the protein content of the emulsion must be such as will enable the emulsion, upon being heated to a temperature above the boiling point of water, to coagulate and form a firm emulsion product within a short period of time, that is, within about 5 minutes, and, preferably within 3 minutes, after being heated to such a temperature. Thus, the meat materials and the additives, including the dry proteinaceous material (if used) are mixed together in proportions such that the meat material is present in an amount of between about 65% to 95% by weight, and preferably from about 75% to 85% by weight of the meat emulsion, with the meat emulsion having a protein to fat ratio of at least about 1.5:1, with a protein to fat ratio of between about 2:1 to 7:1 being preferred. While a higher protein to fat ratio may be used in the meat emulsion, it is generally not preferred since it would increase ingredient costs without providing any significant benefits. It is generally preferred to use a blend of meat and meat by-products as the meat material in the meat emulsion. However, the meat emulsion may be formulated using only meat by-products as the meat material, provided that the resulting meat emulsion, including the dry proteinaceous material (if used), has a protein to fat ratio of at least about 1.5:1.

In addition, the meat emulsion should be formulated to contain between about 45% to 80% by weight moisture, with the moisture content preferably being controlled between about 50% to 75% by weight of the meat emulsion, i.e. the meat materials and additives. The exact concentration of water in the emulsion will, of course, depend on the amount of protein and fat in the emulsion.

The meat mix selected for use is passed through a grinder to reduce the meat material into pieces of substantially uniform size. Generally it is preferred to pass the meat through a grinder equipped with a 1 cm or smaller grinding plate. While satisfactory results may be obtained by grinding the meat to a particle size larger than 1 cm, the use of such larger meat particles is generally not preferred. If the meat materials to be used are in a frozen condition, they must first be prebroken or cut into pieces in order to reduce the size of the pieces going into the grinder. While the size of the pieces will depend on the size of the meat grinder intake, normally the frozen meat material is cut into pieces about 10 cm square.

After grinding, the mix of meat particles is conveyed to a holding tank in which the meat mix preferably is heated to a temperature of between about -1° C. to 7°

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**SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO
DIVISIÓN DE NUEVAS CREACIONES**

2020

Bogotá, D.C., (29 de Noviembre del 2007)

Abogado

Gustavo Tamayo Arango

(Apoderado)

Solicitante: Societè Des Produits Nestlè

A SUNTO	Radicación	01-22588	
	Trámite	002	
	Evento	001	
	Actuación	430	250
	Oficio	018	
	Folios	018	

Patente de Invención ☒ Patente de Modelo de Utilidad ☐

Vía Nacional ☒

Vía PCT (fase nacional) ☐ Cap. I ☐ Cap. II ☐

No. Sol. Internacional _____

Fecha de Presentación Internal. _____

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

1. Documentos estudiados

1.1. Descripción: Folios: 7 a 29

1.2. Reivindicaciones: Folios 29 a 36 y 44 a 46 (capítulo reivindicatorio original)
Folios 128 a 131 (capítulo reivindicatorio modificado)

1.3. Prioridad: Folios: 79 a 95
(Marzo 22 del 2000, US, No. Solicitud 60/191174)

1.6 Respuesta del solicitante Folios: 122 a 126.

El solicitante realizó modificaciones al capítulo reivindicatorio las cuales no se encuentran cambiando el ámbito de las reivindicaciones y tampoco amplían la materia inicialmente presentada por lo tanto, el capítulo reivindicatorio modificado, presentado por el solicitante; es aceptado y sobre éste se presenta el siguiente concepto técnico.

2. Análisis de la Prioridad

La materia contenida en la prioridad que el solicitante reclama, coincide con la materia objeto de la presente solicitud de patente, por lo que dicha prioridad es aceptada.

3. Objeto de la invención

- *Título de la solicitud: "Composición y método de elaboración de alimentos para mascotas".*

El objeto de la presente solicitud de patente de invención consiste en:

Reivindicaciones 1– 10: "Un alimento para mascotas caracterizado porque comprende un cuerpo gelificable térmicamente, formulado, comestible, que comprende al menos 20% en peso de proteína, que tiene una apariencia quemado, un contenido de humedad de 20% a 60% en peso, un contenido de lípidos de 15 a 25% en peso y una estructura que provee firmeza de textura para ser resiliente bajo la presión inicial de la mordida por una mascota animal, en donde el cuerpo es capaz de extruir un jugo grasoso cuando es sometido a una presión baja".

Reivindicaciones 11 a 18: "Un procedimiento para producir un alimento para mascotas que tiene una textura que es resiliente bajo la presión inicial de la mordida por una mascota animal, caracterizado porque incluye los pasos de proveer un cuerpo coherente de alimento producido a partir de una fuente de proteína gelificable térmicamente, reducir el contenido de humedad del cuerpo entre 20 a 50% en peso, causando que al menos una porción del cuerpo tenga una superficie de aspecto quemado y reducir el pH del cuerpo, en donde después de la reducción del contenido de humedad el cuerpo comprende al menos 20% en peso de proteína".

El solicitante en el capítulo descriptivo, presenta el objeto de la invención de la siguiente manera: " Esta invención guarda relación con un alimento para mascota, que tiene un contenido de humedad moderadamente reducido y una estructura que es capaz de estimular la acción de masticar en una mascota que lo come."

- *Clasificación Internacional de Patentes (IPC.): A 23 K 1/00*

4. De la solicitud de Patente

4.1. Reivindicaciones (artículo 30 D 486)

En la parte característica de la reivindicación 1 se presenta la siguiente característica del producto: "una estructura que provee firmeza de textura para ser resiliente bajo la presión inicial de la mordida por una mascota animal en donde el cuerpo es capaz de extruir un jugo grasoso cuando es sometido a una presión baja.". Dicha característica no se encuentra definiendo el alimento para mascotas ya que este es un resultado a alcanzar con el producto que se obtiene, pero no es una característica técnica que permita definir el producto.

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De igual forma se encuentra presentada la reivindicación 3; en la cual el alimento para mascotas se encuentra definido de la siguiente manera: "... porque el cuerpo tiene un elevado buen sabor atribuible a la reacción del tostado". En esta reivindicación se está definiendo el alimento para mascotas según una de las ventajas que presenta el producto; lo cual hace referencia a un resultado a alcanzar y no a una característica técnica que defina el producto.

La característica que se presenta para el alimento para mascotas en la reivindicación 8 es muy general ya que hace referencia a la estructura de bloque que presenta el producto y afirma que: "...la estructura comprende zonas interiores y exteriores, teniendo la zona exterior un menor contenido de humedad que la zona interior"; esta característica del producto no se encuentra aportando algún elemento que defina al alimento para mascotas ya que es un hecho obvio que para cualquier cuerpo es posible encontrar que en la zona exterior se tenga un menor contenido de humedad que en la zona interior; por lo cual esta característica no se encuentra definiendo al producto y tampoco le atribuye los elementos necesarios para diferenciar el producto de lo reportado en el estado de la técnica.

Se le recuerda al solicitante que las composiciones se caracterizan en términos de los componentes que las conforman así como de las proporciones en las cuales estos se encuentren de tal manera que no se considera correcta la forma de definir una composición al presentar ventajas que el producto elaborado pueda presentar.

En el procedimiento presentado en la reivindicación 11 es posible establecer que se encuentra constituido por las etapas que se enuncian a continuación: proporcionar un cuerpo coherente al alimento para mascotas a partir de una fuente de proteína gelificable térmicamente, reducir el contenido de humedad entre el 20% al 50% y reducir el pH del cuerpo. No es suficientemente explícita la forma en la cual se llevan a cabo estas etapas ya que por ejemplo, para la primera etapa se enuncia en la reivindicación dependiente 18 que el procedimiento incluye la formación de una emulsión de carne pero no se indica la forma en la cual se prepara dicha emulsión de carne. De igual forma, en la etapa de reducir el pH del cuerpo tampoco se está indicando la forma de hacerlo así como en la reivindicación dependiente 16 se está señalando que durante el procedimiento se recubre el cuerpo con un ácido pero no se presenta la forma en la que se hace este recubrimiento.

Por lo tanto en las reivindicaciones de proceso no se señalan las características técnicas del procedimiento en particular, para establecer el aporte al estado de la técnica que el procedimiento de la solicitud pueda presentar con respecto a procedimientos similares conocidos.

Según lo anteriormente expuesto, las reivindicaciones sobre las cuales se hace referencia no se encuentran cumpliendo con o establecido en el art.30 de la Decisión 486.

5. Determinación del Estado de la Técnica

La fecha que se ha considerado para realizar la búsqueda de anterioridades en el estado del arte ha sido a la correspondiente a la fecha de presentación de la solicitud prioritaria la cual corresponde al 22 de marzo del 2000. Teniendo en cuenta la fecha indicada se realizó la búsqueda en el estado de la técnica de documentos relacionados con la solicitud encontrándose los siguientes documentos más relevantes:

Nº	Documento	Título	Fecha de publicación
D1	US 3.873.736	Semi-moist meta resembling food product and method of preparation	1975-Mar-25
D2	US 5.928.705	Cooked extruded meta product comprising additive and method fro making the same	1999-Jul-27
D3	US 4.781.939	Layered meat emulsion product and method of producing same	1988-Nov-1

12. Análisis de patentabilidad (artículo 14 D486)

12.2 Nivel inventivo (artículo 18 D486)

En la anterioridad D1 se presenta un producto alimenticio proteico y semihúmedo el cual esta constituido por carne y otros materiales; este producto presenta una textura elástica similar a la carne natural. El contenido de humedad de estos productos se encuentra entre un 20 a 25% por peso del producto y estos son preservados de ataques bacterianos por la inclusión de un material lo suficientemente soluble en agua para producir un efecto bacteriostático. Un material soluble en agua típicamente utilizado par este propósito es el azúcar el cual puede estar en una cantidad entre el 15% al 35% del peso total del producto. El contenido de humedad preferido para el producto es del 30% el cual puede variar dependiendo del contenido de azúcares solubles, alcoholes polihídricos y sales empleadas para disminuir la actividad de agua. Las proteínas del producto son coaguladas por medio del calentamiento obteniendo una matriz elástica para el producto, especialmente cuando el producto tiene un pH entre 5.5 a 6.5. la cantidad de proteína coagulable empleada en el producto puede variar entre 3 y 40% del peso total del producto. El contenido de proteína varía según la fuente de proteína empleada. Por ejemplo, un contenido preferido de gluten de trigo se encuentra en un 25 a 35% en peso. La cocción del producto se realiza a una temperatura entre 45° a 235° C, por un lapso de tiempo entre 1 a 60 minutos; pero las condiciones preferida para la cocción son de 130° a 150° C por 5 a 20 minutos. Para prevenir la adherencia ente las piezas estas son recubiertas con una película delgada de aceite o grasa. El tratamiento de las piezas de carne cortadas con aceite o con una solución acuosa estabilizada proporciona al producto humedad y una superficie de apariencia jugosa lo cual le da mayor aceptación al animal del producto. De otra parte, es particularmente ventajoso adicionar materiales saborizantes a la solución estabilizada así los sabores concentrados a la superficie del producto lo cual produce que el animal acepte el producto. Los materiales saborizantes pueden comprender extractos de carne,

hidrolizados de proteína y mezclas de aminoácidos y azúcares.

La anterioridad D2 presenta un producto cárnico, extruido y cocinado que presenta una cara superficial externa ; en la cual la carne se encuentra impregnada con un aditivo ; la cual tiene un espesor que se encuentra en un rango entre 1 a 5 mm. El producto cárnico comprende un capa co-extruida de de grasa o emulsión de carne dispuesta de forma adyacente a la capa de carne del núcleo. La invención también presenta un método para hacer el producto de carne extruido. El aditivo que presenta el producto es un colorante, saborizante o condimento. Como un alternativa, el producto extrudado puede comprender un núcleo extruido y una o más capas coextruidas de carne las cuales están dispuestas completa o parcialmente alrededor del núcleo. Dicho núcleo extruido puede consistir de carne magra y las capas de carne que se encuentran recubriendo el núcleo pueden ser del mismo tipo de carne o diferente.

En la anterioridad D3 se presenta la producción de una emulsión de carne en la forma de trozos o piezas que tienen una pluralidad de capas yuxtapuestas, las cuales se pueden separar manualmente. Los trozos de carne son similares a la carne en apariencia, textura y consistencia. Dentro del proceso de fabricación del producto se adiciona vapor a la emulsión cárnica por lo cual se obtiene una coagulación rápida lo cual facilita la formación de una estructura en capas de la emulsión y sirve par romper la masa de la emulsión en pedazos o piezas las cuales son descargadas desde una zona de procesamiento tubular. Los pedazos de emulsión de carne tienen una apariencia, textura y estructura muy próxima a trozos de carne natural. Típicamente el material cárnico se formula para contener como máximo 25% de grasa, preferiblemente 15% en peso de grasa.

La formulación cárnica, de la anterioridad D3, puede variar al incluir en ella material de proteína seca, tratando de obtener una relación de proteína grasa adecuada para formar un producto de emulsión de carne firme previa coagulación de la proteína sin que la emulsión presente inestabilidad.

En la s anterioridades se presentan productos cárnicos, los cuales son formados a base de emulsiones de carne en las cuales se involucran materiales que aportan proteínas y se logra establecer una relación de proteína: grasa con el fin de obtener emulsiones que proporcionen las características de firmeza, elasticidad y estabilidad deseadas par el producto. El contenido de humedad que se presenta para los productos cárnicos de las anterioridades se encuentran entre en los mismos rangos que los contemplados en la invención de la solicitud ya que para esta se contempla un rango de 20 a 60% en peso. También se puede observar que en las anterioridades se contemplan estructura en capas para la emulsión una vez la proteína ha precipitado. En las anterioridades D1 y D2 se contempla la presencia de un recubrimiento para el producto de emulsión de carne el cual puede estar constituido por compuestos solubles en agua que pueden tener variados propósitos tales como aumentar el sabor agradable en el producto y entre los que se incluyen aromatizantes o condimentos. En la anterioridad D2 se muestra específicamente la forma en la cual se dispone el recubrimiento con respecto a la emulsión de carne.

En los procedimientos para la elaboración del producto cárnico se considera la formación de una emulsión de carne en la cual se precipita la proteína por medio de calor para obtener una consistencia de gel y en la anterioridad de D1 se consideran unos valores bajos de pH al igual que lo descrito en la invención de la solicitud.

Según lo anterior los elementos técnicos que se encuentran presentados en la invención de la solicitud se encuentran en los documentos relacionados como anterioridades por lo tanto, una persona versada en la materia fácilmente deduciría lo presentado en la invención con la información que es posible extraer de las anterioridades presentadas para la formación de productos cárnicos a partir de la precipitación de proteínas con calor las cuales van a tener una consistencia de gel gracias también a los contenidos de humedad que se manejan en el producto. Por lo tanto, la solicitud carece de Nivel inventivo.

13. Conclusión:

Los requisitos de patentabilidad de la presente solicitud se encuentran afectados así:

Nº	Documento Nº	Reivindicaciones afectadas	Requisito que afecta
D1	US 3.873.736	1 a 18	NIVEL INVENTIVO
D2	US 5.928.705	1 a 18	NIVEL INVENTIVO
D3	US 4.781.939	1 a 18	NIVEL INVENTIVO

14 Respuesta a los argumentos del solicitante:

El solicitante, en memorial radicado el 13 de julio del 2007, da respuesta de manera satisfactoria a algunas de las observaciones realizadas en cuanto a la claridad de la solicitud y solventa las falencias en cuanto a la Unidad de Invención de la solicitud original ; de esta manera el nuevo capítulo reivindicatorio es aceptado y se realizan observaciones en cuanto a concisión y claridad del nuevo capítulo reivindicatorio así como de los requisitos e patentabilidad en ele presente concepto ; tales observaciones es posible

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

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

ALIX CARMENZA CÉSPEDES DE VERGEL
Jefe de División de Nuevas Creaciones

El anterior requerimiento fue notificado por fijación en lista, de fecha 10 SEP 2008

CONCEPTO TÉCNICO No. 2624	EXAMINADOR TÉCNICO Código No.202064
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