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(54) Title: PROCESSED MEATS COMPRISING DIETARY FIBER GEL

(57) **Abstract:** According to the present invention, fat and caloric content of processed meats can be reduced by the replacement of a portion fat content normally found in processed meats with an amount of dietary fiber. The result is that fat and caloric content of processed meats can be manipulated with minimal effect on taste and texture. Furthermore, the processed meats can further comprise functional foods that increase health and nutritional benefits of the processed meats. The functional foods can be added individually, and in any combination thereof. Hence, in addition to reducing fat and caloric content of processed meats by replacing a portion of fat with dietary fiber gel, additional health benefits can be achieved with compositions that include functional foods.



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~~A. C. TITLE OF THE INVENTION~~

PROCESSED MEATS COMPRISING DIETARY FIBER GEL.

B. CROSS-REFERENCE TO RELATED APPLICATIONS

This invention is the subject of United States patent application number 10/878796 filed on June 28, 2004, which is incorporated by reference herein.

C. TECHNICAL FIELD

The present invention relates generally to the field of food science and relates more specifically to processed meats comprising insoluble fiber compositions.

D. BACKGROUND ART

The present invention relates to processed meats comprising dietary fiber gel. Recent media attention to the global problem of obesity demonstrates a need for greater availability of foods with low caloric and fat content. This is especially true for foods that typically have high fat and caloric content, such as processed meats.

Processed meats typically comprise some fat. Other ingredients can vary according to the type of processed meat and the recipe followed, but typically, processed meats are high in both fat and caloric content. Examples of processed meats include but are not limited to all types of sausages including hot dogs and fish dogs, ground meats, pressed meats, and the like, and for purposes of this document include vegetable burgers.

In recent years, some companies have begun to offer reduced fat processed meats. This variety of processed meat, however, often fails to retain the desirable taste and texture of processed meats comprising higher fat contents.

Accordingly, there is a need for reduced fat and caloric content processed meats that have the desirable flavor and texture of high fat and high caloric content processed meats.

E. DISCLOSURE OF THE INVENTION

A composition of matter for use in producing high-fiber, low-calorie and low-fat processed meats is provided. The composition includes dietary fiber gel that replaces fat in

processed meats. In addition, compositions are provided that include dietary fiber gel and other functional ingredients for nutritionally fortified processed meats.

F. BEST MODE FOR CARRYING OUT THE INVENTION

The following description provides for the use of dietary fiber gels for fat and calorie reduced processed meats. When substituted for fat containing compounds, dietary fiber gels reduce the fat and calorie content of food products. Dietary fiber gels are fully described in U.S. Patent number 5,766,662 (the '662 patent), which is incorporated by reference herein. These dietary fiber gels comprise insoluble dietary fibers consisting of morphologically disintegrated cellular structures, and are characterized by their ability to retain large amounts of water. Dietary fiber gel can be a gellable product or a gel powder depending on water content. Typically, dietary fiber gel is produced as a gellable product that is dried to remove water so as to produce a gel powder having reduced water content. Dietary fiber gels are characterized by high hydration capacity when reconstituted with water. Additionally, these dietary fiber gels are characterized by their high viscosity at low solid levels. Other insoluble fibers derived from cereals, grains and legumes derived by conventional dry milling consist of morphologically intact cellular structures, and thus impart a gritty texture to the foods in which they are contained. The dietary fiber gels disclosed in the '662 patent, however, consist of morphologically disintegrated cellular structures and thus impart a smoother texture than other insoluble fiber formulations. A physically smooth morphology is readily revealed under electron microscopic magnification of dietary fiber gel. The smooth morphology reflects the amorphous nature of the non-particulate insoluble compounds that constitute dietary fiber gel.

According to the present invention, fat and caloric content can be reduced by the replacement of the fat-containing ingredients normally found in processed meats with dietary fiber gel, such as oil and shortening compositions comprising dietary fiber gel. Substituting dietary fiber gel for fat does not adversely affect either the taste or texture of the processed meats.

~~FIG. 1~~ Different categories of processed meats are available to consumers, including traditional processed meats and vegetable-derived meat substitutes. Examples of traditional processed meats, including all types of sausages including hot dogs and fish dogs, ground meats, pressed meats, and the like, while vegetable burgers are an example of a vegetable-derived meat substitute. Traditional processed meats can be formulated such that the processed meat comprises 0.1 percent to 8.0 percent dietary fiber gel solids by replacing an appropriate amount, that is, an amount prorated to deliver this range of dietary fiber gel solids, of fat, such as included in oil and liquid shortening used to manufacture processed meats. Vegetable-derived meat substitutes such as vegetable burgers can be formulated such that the processed meat comprises 0.1 percent to 8.0 percent dietary fiber gel solids by replacing an appropriate amount, that is, an amount prorated to deliver this range of dietary fiber gel solids, of fat, such as included in oil and liquid shortening used to manufacture vegetable-derived meat substitutes.

The result is that fat and caloric content of processed meats can be manipulated with minimal effect on taste and texture, and as stated above, additional health benefits can be achieved through consumption of processed meats comprising dietary fiber gel when functional foods are included in the formulations.

Functional ingredients can be added to the composition of processed meats to increase health and nutritional benefits of this food. Most notably functional foods such as high omega three and omega six oils and pure omega three and omega six fatty acids, medium chain triglyceride, beta carotene, calcium stearate, vitamin E, bioflavonoids, fagopyritrol, polyphenolic antioxidants of vegetable origin, lycopene, luteine and soluble fiber, for example Beta-Glucan derived from yeast, and other soluble fibers derived from grain, flax seed, and other vegetable and fruit fiber sources can be added to processed meats.

The following ranges of the functional foods in processed meats are given by way of example, but other functional foods, notably fat soluble functional foods, can be added as well. High omega three oils and omega six oils, for example flax seed oil, can be added in

78 concentrations of 1 percent to 50 percent of the composition by weight. Pure omega three fatty
79 acids and omega six fatty acids can be added in concentrations ranging from 1 percent to 30
80 percent of the composition by weight. If both pure omega three or six fatty acids and high omega
81 three oils are used, their respective concentrations can be prorated to give an appropriate end
82 concentration of high omega three fatty acids. Medium chain triglyceride can be added in
83 concentrations ranging from 1 percent to 30 percent of the composition by weight. Fagopyritrol
84 or foods containing fagopyritrol can be added in concentrations of 0.25 percent to 20 percent of
85 the composition by weight. Polyphenolic antioxidants of vegetable origin, for example lycopene,
86 beta carotene, luteine, and bioflavonoids can be added in concentrations ranging from 0.25
87 percent to 20 percent of the composition by weight. Soluble fiber, for example beta Glucan, can
88 be added in concentrations ranging from 5 percent to 15 percent of the composition by weight.
89 Any functional foods added to the composition can be added in such concentrations to deliver up
90 to 100 percent, preferably 25 percent to 100 percent, of prevailing recommended daily intake
91 recommendations by the FDA (Food and Drug Administration of the United States), European
92 Commission, and reported by the FAO (Food and Agricultural Organization of the United
93 Nations) in the Codex Alimentarius, or other international authorities.

94 Although the present invention is illustrated by the example of processed meats, such as
95 traditional processed meats, including all types of sausages including hot dogs and fish dogs,
96 ground meats, pressed meats, and so forth, and vegetable-derived meat substitutes, such as
97 vegetable burgers, the present invention applies to foods and food formulations that include fat
98 containing ingredients such as oils, greases, and lards that are derived from vegetable, animal, or
99 synthetically produced that are used in the mixing, baking, reheating or other processing as
100 necessary to produce edible foods.

101 An advantage of the present invention is the ability to provide a unique composition of
102 matter embodied by low-calorie and low-fat processed meats. The fat and caloric content are
103 advantageously reduced by the replacement of the fat normally found in processed meats with

104 ~~compositions comprising dietary fiber gel.~~ Food compositions that reduce caloric and fat content
105 answer an unmet need in the food industry to provide the consuming public with a healthier,
106 higher fiber alternative to traditional types of processed meats that typically are inherently
107 fattening. Another advantage is the providing processed meats that have been fortified with
108 insoluble fiber and other functional foods. Yet another advantage is that the fat replacement with
109 dietary fiber gel does not adversely affect either the taste or texture of processed meats. Finally,
110 the fat and caloric content of processed meats can be advantageously manipulated with minimal
111 adverse effect on taste and texture, and additional health benefits can be achieved through
112 composition of processed meats comprising dietary fiber gel when functional foods are included
113 in the formulations.

114 The present invention may be embodied in other specific forms without departing from its
115 spirit or essential characteristics. The described embodiments are to be considered in all respects
116 only as illustrative and not restrictive. The scope of the invention is, therefore, indicated by the
117 appended claims rather than by the foregoing description. All changes that come within the
118 meaning and range of equivalency of the claims are to be embraced within their scope.
119

~~119~~ ~~10. CLAIMS~~ 119 CLAIMS 119

120 I claim:

121 1. Processed meat, the processed meat having a formulation, the processed meat comprising
122 dietary fiber gel, wherein dietary fiber gel is added in a prorated amount such that solids
123 contained within the dietary fiber gel represent 0.1 percent to 8.0 percent by weight of the overall
124 processed meat formulation, and dietary fiber gel replaces an amount of fat used in an otherwise
125 identical recipe of processed meat that uses no dietary fiber gel.

126 2. Processed meat of claim 1, wherein the processed meat is a hot dog.

127 3. Processed meat of claim 1, wherein the processed meat is sausage.

128 4. Processed meat of claim 1, wherein the processed meat is pressed meat.

129 5. Processed meat of claim 1, wherein the processed meat is ground meat.

130 6. Processed meat of claim 1, further comprising at least one functional food selected from a
131 group consisting of

132 high omega three oil, wherein high omega three oil represents 1 percent to 50 percent of
133 the processed meat by weight,

134 pure omega three fatty acid, wherein pure omega three fatty acid represents 1 percent to
135 30 percent of the processed meat by weight,

136 a combination of high omega three oil and pure omega three fatty acid, wherein the total
137 omega three fatty acid present in the combination represents 1 percent to 30 percent of the
138 processed meat by weight,

139 medium chain triglyceride, wherein medium chain triglyceride represents 1 percent to 30
140 percent of the processed meat by weight,

141 fagopyritol, wherein fagopyritol represents 0.25 percent to 20 percent of the processed
142 meat by weight,

143 lycopene, wherein the lycopene represents 0.25 percent to 20 percent of the processed
144 meat by weight,

145 PCT polyphenolic antioxidants of vegetable origin, wherein polyphenolic antioxidants

146 represent 0.25 percent to 20 percent of the processed meat by weight,

147 luteine, wherein the luteine represents 0.25 percent to 20 percent of the processed meat by
148 weight,

149 beta carotene, wherein the beta carotene represents 0.25 percent to 20 percent of the
150 processed meat by weight,

151 calcium stearate, wherein the calcium stearate represents 0.25 percent to 20 percent of the
152 processed meat by weight,

153 vitamin E, wherein the vitamin E represents 0.25 percent to 20 percent of the processed
154 meat by weight,

155 bioflavonoid, wherein the bioflavonoid represents 0.25 percent to 20 percent of the
156 processed meat by weight.

157 7. Vegetable-derived meat substitute, the vegetable-derived meat substitute having a formulation,
158 the vegetable-derived meat substitute comprising dietary fiber gel, wherein dietary fiber gel is
159 added in a prorated amount such that solids contained within the dietary fiber gel represent 0.1
160 percent to 8.0 percent by weight of the overall vegetable-derived meat substitute formulation, and
161 dietary fiber gel replaces an amount of fat used in an otherwise identical recipe of vegetable-
162 derived meat substitute that uses no dietary fiber gel.

163 8. Vegetable-derived meat substitute of claim 1, further comprising at least one functional food
164 selected from a group consisting of

165 high omega three oil, wherein high omega three oil represents 1 percent to 50 percent of
166 the vegetable-derived meat substitute by weight,

167 pure omega three fatty acid, wherein pure omega three fatty acid represents 1 percent to
168 30 percent of the vegetable-derived meat substitute by weight,

169 ~~P C~~ ~~a combination of high omega three oil and pure omega three fatty acid, wherein the total~~
170 ~~omega three fatty acid present in the combination represents 1 percent to 30 percent of the~~
171 ~~vegetable-derived meat substitute by weight,~~
172 ~~medium chain triglyceride, wherein medium chain triglyceride represents 1 percent to 30~~
173 ~~percent of the vegetable-derived meat substitute by weight,~~
174 ~~fagopyritrol, wherein fagopyritrol represents 0.25 percent to 20 percent of the vegetable-~~
175 ~~derived meat substitute by weight,~~
176 ~~lycopene, wherein the lycopene represents 0.25 percent to 20 percent of the vegetable-~~
177 ~~derived meat substitute by weight,~~
178 ~~polyphenolic antioxidants of vegetable origin, wherein polyphenolic antioxidants~~
179 ~~represent 0.25 percent to 20 percent of the vegetable-derived meat substitute by weight,~~
180 ~~luteine, wherein the luteine represents 0.25 percent to 20 percent of the vegetable-derived~~
181 ~~meat substitute by weight,~~
182 ~~beta carotene, wherein the beta carotene represents 0.25 percent to 20 percent of the~~
183 ~~vegetable-derived meat substitute by weight,~~
184 ~~calcium stearate, wherein the calcium stearate represents 0.25 percent to 20 percent of the~~
185 ~~vegetable-derived meat substitute by weight,~~
186 ~~vitamin E, wherein the vitamin E represents 0.25 percent to 20 percent of the vegetable-~~
187 ~~derived meat substitute by weight,~~
188 ~~bioflavonoid, wherein the bioflavonoid represents 0.25 percent to 20 percent of the~~
189 ~~vegetable-derived meat substitute by weight.~~

190 9. Processed meat of claim 1, further comprising at least one functional food and combinations
191 thereof selected from a group consisting of high omega three oil; pure omega three fatty acid; a
192 combination of high omega three oil and pure omega three fatty acid; medium chain triglyceride;
193 fagopyritrol; lycopene; polyphenolic antioxidants of vegetable origin; luteine; beta carotene;
194 calcium stearate; vitamin E; and bioflavonoid, wherein the processed meat delivers at least 25%

195 of the recommended daily intake of the functional food as reported by the United States Food and
196 Drug Administration.

197 10. Processed meat of claim 1, further comprising at least one functional food and combinations
198 thereof selected from a group consisting of high omega three oil; pure omega three fatty acid; a
199 combination of high omega three oil and pure omega three fatty acid; medium chain triglyceride;
200 fagopyritrol; lycopene; polyphenolic antioxidants of vegetable origin; luteine; beta carotene;
201 calcium stearate; vitamin E; and bioflavonoid, wherein the processed meat delivers at least 25%
202 of the recommended daily intake of the functional food as reported by the European
203 Commission.

204 12. Processed meat of claim 1, further comprising at least one functional food and combinations
205 thereof selected from a group consisting of high omega three oil; pure omega three fatty acid; a
206 combination of high omega three oil and pure omega three fatty acid; medium chain triglyceride;
207 fagopyritrol; lycopene; polyphenolic antioxidants of vegetable origin; luteine; beta carotene;
208 calcium stearate; vitamin E; and bioflavonoid, wherein the processed meat delivers at least 25%
209 of the recommended daily intake of the functional food as reported by the FAO (Food and
210 Agriculture Organization of the United Nations) in the Codex Alimentarius.

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