

Singapore

PATENT SPECIFICATION

NO DRAWINGS

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COMPLETE SPECIFICATION

Improvements in or relating to Dietary Products

5 We, PFIZER LIMITED, a British Company, of Ramsgate Road, Sandwich, Kent, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

10 This invention relates to dietary products, that is, products usable in a restricted calorie diet.

Many people who are above average weight can lose weight if they adhere to a diet whose calorific value is restricted. Conventional foodstuffs of low calorific value are available for such use, but to rely on a diet based on these foodstuffs can lead to a feeling of emptiness, nausea and a disturbance of bowel rhythm.

By virtue of their appetite-depressant or some other effect, various substances which act systemically, such as amphetamines, phenmetrazine, thyroid extracts, pituitary extracts and diuretics, have been suggested for use in bringing about a loss in weight. However, though they may be effective in reducing weight, most if not all of these substances have powerful side effects (they may produce depression, emotional disturbance or addiction), and their use accordingly requires close supervision by a physician.

35 The present invention utilises the capacity of bulking agents to reduce appetite. Such agents are hydratable colloidal substances and function by swelling through hydration in the stomach or intestines, so producing a bulky mass that gives a feeling of fullness; formation of this bulky mass also assists normal bowel function.

40 According to the invention there is provided a dietary product in the form of a sandwich of two or more biscuits formed from a farinaceous mixture, the filling comprising a carbohydrate and a finely divided bulking

agent dispersed throughout a fatty matrix, the bulking agent being substantially insoluble in the fat. 45

The dietary product may consist of two biscuits with filling between them, or it may take the form of a multi-layer sandwich, in which two or more layers of filling are separated by and contained between biscuits. The biscuits may take the form of conventional wholemeal biscuits. Advantageously the texture of the biscuits is such that they require thorough chewing before they can comfortably be swallowed. Mastication leaves the particles of bulking agent exposed for hydration, which thus begins in the saliva produced during chewing and continues in the stomach fluids. 50 55 60

The farinaceous mixture from which the biscuits are formed may contain ingredients, such as casein and egg albumen, that supplement the protein content of the flour employed. The mixture may also contain other nutritional ingredients, such as physiologically acceptable amino acids, malt extract, vegetable oil and calcium phosphate and ferrous salts or other mineral salts providing calcium, phosphorus and iron. 65 70

The filling comprises a carbohydrate and a finely divided bulking agent dispersed throughout a fatty matrix.

The carbohydrate may be a sugar, such as glucose or sucrose. These are relatively rapidly metabolisable, so that after ingestion of the dietary product a rise in the level of the blood sugar occurs quickly, so physiologically depressing the appetite. Alternatively, if a less sweet product is desired, a starch may be employed as carbohydrate. 75 80

Examples of suitable bulking agents are methyl cellulose, sodium carboxymethyl cellulose, psyllium, guar gum, sodium alginate, agar, pectin, and caragenin, the cellulose derivatives being particularly preferred. 85

[Price 4s. 6d.]

The fat (i.e. edible glyceride of a higher fatty acid) constituting the fatty matrix is preferably a vegetable fat, such as coconut oil or palm kernel oil.

- 5 Dispersion of the bulking agent in finely divided form in the fatty matrix (as distinct from a cooked dough matrix, such as a biscuit forms) renders the bulking agent more thoroughly hydratable, and its swelling capacity is accordingly more effectively utilised.

- 10 Apart from the carbohydrate, bulking agent and fat, the filling may also contain vitamins, mineral salts and flavours. If desired, enough vitamins and mineral salts can be incorporated in the product as a whole to ensure that it is sufficient to supply substantially all the nutritional requirements to maintain the health of a person consuming the product as sole diet. Alternatively, it can be arranged that the dietary product contains only part of the nutritional requirements; the consumer will then rely on a foodstuff such as milk to make up the balance. It is convenient to prepare the dietary product in units of such a size and containing such pro-

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Sandwich filling

- deodorised coconut oil - - - - 4.5 grams
sucrose - - - - - 5.5 grams
sodium carboxymethyl cellulose - - - - 1.0 grams
vitamin A - - - - - 1000 international units
55 vitamin B₁ - - - - - 0.3 milligrams
vitamin B₂ - - - - - 0.35 milligrams
vitamin D - - - - - 15 international units
nicotinamide - - - - - 2.5 milligrams
ascorbic acid - - - - - 12 milligrams
60 dibasic calcium phosphate - - - - 500 milligrams

- The vitamins A and D are mixed with the calcium phosphate to be absorbed therein and the dry particles of sodium carboxymethyl cellulose (all passing BSS No. 30 sieve; 90% passing BSS No. 60 sieve), the vitamins B₁ and B₂, the nicotinamide and the ascorbic acid are then thoroughly blended with the treated calcium phosphate in a mixer and the resultant blended powdery mass is sieved and then carefully dispersed in the coconut oil together with the sugar to form a homogeneous stiff paste in which, if desired, a flavouring material and a colouring material may be incorporated.

- 75 An appropriate amount of this sandwich filling is placed between two biscuits to form a sandwich product.

EXAMPLE 2 Biscuit formula

- 80 Soya flour - - - - 140 grams
white flour - - - - 140 grams
whole meal flour - - - - 140 grams
sucrose - - - - - 50 grams
malt extract - - - - - 8 grams
85 golden syrup - - - - 15 grams
margarine - - - - - 56 grams

portions of nutrients that six units taken in one day yield a calorie level of approximately 1100, thus providing an acceptable weight-reducing diet.

The following examples further illustrate the present invention.

EXAMPLE 1 Biscuit formula

- Soya flour - - - - 140 grams
white flour - - - - 140 grams 35
wholemeal flour - - - - 140 grams
sucrose - - - - - 100 grams
malt extract - - - - - 8 grams
golden syrup - - - - - 15 grams
margarine - - - - - 56 grams 40
palm kernel oil - - - - 45 grams
lard - - - - - 56 grams
dried milk - - - - - 10 grams
dibasic calcium phosphate - 30 grams
reduced iron - - - - - 0.065 grams 45

The materials are blended and formed into a dough. Pieces are formed to the requisite shape and weight and then baked to produce the biscuits.

- palm kernel oil - - - - 45 grams
lard - - - - - 56 grams
dried milk - - - - - 10 grams
reduced iron - - - - - 0.065 grams 90

The materials are blended and formed into a dough. Pieces are formed to the requisite shape and weight and then baked to produce the biscuits.

Sandwich filling

- hydrogenated palm kernel oil 3.805 grams
maize starch - - - - 2.330 grams
sodium carboxymethyl cellulose - - - - 0.852 grams
dibasic calcium phosphate - 0.497 grams 100
full fat soya flour - - - - 0.426 grams
spray dried yeast extract - 0.512 grams
synthetic cheese flavour - 0.0125 grams
vitamin mix (as in Example 1) - - - - 0.021 grams 105
methionine - - - - - 0.050 grams

The constituents of the sandwich filling are mixed and blended as described in Example 1.

An appropriate amount of this sandwich filling is placed between two biscuits to form a sandwich product. 110

WHAT WE CLAIM IS:—

1. A dietary product in the form of a sandwich of two or more biscuits formed from a farinaceous mixture, and filling, the filling comprising a carbohydrate and a finely divided bulking agent dispersed throughout a fatty matrix, the bulking agent being substantially insoluble in the fat. 35
2. A dietary product according to Claim 1 in the form of two biscuits with filling between them. 40
3. A dietary product according to Claim 1 in the form of a multi-layer sandwich, in which two or more layers of filling are separated by and contained between biscuits. 45
4. A dietary product according to any one of Claims 1 to 3, in which the farinaceous mixture from which the biscuits are formed contains ingredients to supplement the protein content of the flour employed. 50
5. A dietary product according to Claim 4, in which the protein-supplementing ingredient is casein. 55
6. A dietary product according to Claim 4, in which the protein-supplementing ingredient is egg albumen. 60
7. A dietary product according to any one of the preceding claims, which contains vitamins and mineral salts providing calcium, phosphorus and iron.
8. A dietary product according to any one of Claims 1 to 7 in which the carbohydrate is a sugar.
9. A dietary product according to Claim 8, in which the sugar is glucose.
10. A dietary product according to Claim 8, in which the sugar is sucrose.
11. A dietary product according to any one of Claims 1 to 7, in which the carbohydrate is a starch.
12. A dietary product according to any one of Claims 1 to 11, in which the bulking agent is sodium carboxymethyl cellulose or methyl cellulose.
13. A dietary product according to any one of Claims 1 to 11, in which the bulking agent is sodium alginate or psyllium.
14. A dietary product according to any one of Claims 1 to 11, in which the bulking agent is carageenin, agar or guar gum.
15. A dietary product according to any one of the preceding Claims, in which the fat constituting the fatty matrix is a vegetable fat.
16. A dietary product according to Claim 15, in which the vegetable fat is coconut oil.
17. A dietary product according to Claim 15, in which the vegetable fat is palm kernel oil.
18. A dietary product substantially as described in Example 1 herein.
19. A dietary product substantially as described in Example 2 herein.

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