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PATENT SPECIFICATION

NO DRAWINGS

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COMPLETE SPECIFICATION

Tooth Paste

We, J. R. GEIGY A.G. a body corporate organised according to the laws of Switzerland, of 215, Schwarzwaldallee, Basle, Switzerland, 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: —

The present invention concerns improved tooth pastes containing sodium chloride and also the production thereof.

Tooth pastes which contain a considerable amount of sodium chloride in the form of ordinary salt and/or marine salt have been described repeatedly in the more recent patent literature, U.S. patent No. 2,994,642 and Swiss patent No. 332,336 are mentioned as more recent patents concerning this subject. Insofar as such tooth pastes were commercially sold, they were appreciated particularly by dentists; in particular, their favourable firming action on the gums was esteemed. Salt-containing tooth pastes were also acclaimed by the public, but interest in such tooth pastes was limited more or less to people who had to take great care of their gums either because of increased sensitivity or because contraction thereof had already occurred. Some peculiarities of salt-containing tooth pastes stood in the way of the more general use, which was desirable, particularly, for prophylaxis or gingical diseases. These were particularly their salty flavour, also, among other things, they were not economical in use and did not give a sufficiently fresh feeling to the mouth. The aim of the present invention is to provide a salt-containing tooth paste which, while retaining the undeniable advantages of such tooth pastes, is more similar in its subjective appeal and flavour to the usual tooth pastes preferred by the public.

It has now been found that such salt-containing tooth pastes substantially correspond to the above requirements which contain a concentrated aqueous sodium chloride solution in admixture with moisture retaining agents, gelling agents which gel in concentrated salt solutions, abrasives usual in tooth pastes, slightly surface active substances, corresponding to a surface tension of 45—60 dyn/cm after dispersion of 1 part of paste in 20 parts of water as well is, if desired, with 0.02—0.2% saccharine (sodium salt) and/or 0.3—1.5% of N-cyclohexanesulphamic acid sodium salt (shortly termed cyclamate sodium through out the specification and claims) and, if desired, aromatic substances and other additives.

The parts and percentages given throughout the specification and claims are by weight.

Tooth pastes according to the invention contain, for example, 12—17%, preferably about 15%, of sodium chloride, e.g. in the form of a concentrated solution ordinary salt and/or marine salt, the latter to take advantage of the trace elements occurring therein. Examples of suitable moisture retaining agents are glycerine or other polyols in amounts of 5—20%, preferably 5—10%. As tooth pastes containing soaps or strongly surface active, foaming detergents loosen the gums in that, on the one hand, they dissolve important substances out of the cells and, on the other, promote the peneration of dissolved substances, only slightly surface active substances are suitable for a paste based on the osmotic action of concentrated salt solutions which promotes firming of the gums. Such surface active substances should have, in addition, good solubility and cleansing powers. As such can be used, in particular, slightly or non-foaming, non-ionogenic substances which have little taste such as, e.g. condensates of polypropylene glycol with ethylene

[*Price 4s. 6d.*]

SEE ERRATA SLIP ATTACHED

oxide in amounts of about 0.1—1%. The surface tension of 45—60 dyn/cm to be attained by these substances roughly corresponds to the range of surface tension of the saliva (cf. D. Afonsky, "Saliva and its Relation to Oral Health", University of Alabama Press 1961, page 32) and it is particularly favourable physiologically.

Examples of gelling agents are hydroxyethyl cellulose or methyl cellulose in amounts of 0.5—2.5%. These agents also gel easily in concentrated salt solutions and give the paste a smooth consistency. Due to this, the paste adheres well both to the tooth brush and to the teeth and is, therefore, more economical in use and feels more pleasant than the salt-containing tooth pastes usual hitherto. Suitable abrasives are those usual in tooth pastes, e.g. dicalcium phosphate dihydrate and insoluble sodium metaphosphate. Strongly abrasive substances which attack teeth and gums, however, are not in accordance with the aim of this invention. The flavourings which are usual in tooth pastes can be used, e.g. peppermint oil alone or combined with star anise oil or other ethereal oils.

By the addition of saccharine and/or cyclamate sodium in the slight amounts mentioned, it is possible to cover to a very great extent the salty flavour which is unpleasant to some people; in addition, the effect of the flavourings is increased by the addition of the above mentioned sweeteners. In particular, the possibility of covering the taste of many times the amount of sodium chloride by means of a sweetener without making the taste of the sweetener itself unpleasant or adversely influencing the aroma, was surprising and could not have been foreseen.

Therefore, a content of from 0.5 to 1.2% of a mixture of saccharine sodium salt and cyclamate sodium in a proportion of from 1:7 to 1:12 by weight, is recommended as sweetener.

Colloidal silicic acid, in amounts of about 0.5—5%, preferably 2—3%, can be used as further additive. This is already an important component of known salt-containing tooth pastes and serves therein, on the one hand to attain the desired consistency and, on the other, as adsorption agent for toxins. Due to the latter property, it is also added, if desired, to the new tooth pastes according to the invention. To attain the pasty consistency however, larger amounts of colloidal silicic acid would be necessary in the absence of the said gelling agent but, due to the adsorbant action, they would make it more difficult if not impossible to flavour the tooth pastes. In addition, smoother pastes can be produced with the gelling agents mentioned above. In the same way, strongly adsorbant abrasives such as chalk should be avoided or only used in limited amounts in order to maintain the flavouring.

The following examples illustrate the invention without limiting it in any way.

EXAMPLE 1

To produce 100 g of tooth paste, 15.00 of marine salt and 0.16 g of saccharine sodium salt are dissolved in 45.34 g of water, 5.00 g of glycerine and 1.00 g of hydroxyethyl cellulise (the commercial product Natrosol 250 MR, Hercules Powder Co., Wilmington) as gelling agent, are added and the whole is allowed to gel while stirring. 0.50 g of condensate of polypropylene glycol with ethylene oxide (the commercial product Pluronic F 68 (Registered Trade Mark), Wyandotte Chemicals Co., Wyandotte, USA) are dissolved in the jelly formed. 15.00 g of dicalcium phosphate dihydrate, 15.00 g of insoluble sodium metaphosphate (both products of Monsanto Chemical Co., St. Louis) and 2.50 g of colloidal silicic acid (Aerosil (Registered Trade Mark (unpressed, made by Degussa, Frankfurt) are mixed together and then stirred into the above jelly. Then, 0.50 g of tooth paste flavouring (with peppermint oil as main component) are added and the whole is well mixed and homogenised. The tooth paste so obtained has the physiologically favourable pH value of about 4.5.

Analogously to Example 1, tooth pastes of the following composition are prepared:

EXAMPLE 2

Water	44.12 g
Marine salt	15.00 g
Cyclamate sodium	1.80 g
Glycerine	5.00 g
Natrosol 250 MR	1.00 g
Pluronic F 68	0.50 g
Dicalcium phosphate dihydrate	15.00 g
Insoluble sodium metaphosphate	15.00 g
Aerosil unpressed	2.50 g
Star anise oil	0.10 g
Peppermint oil	0.29 g

The marine salt is dissolved in water and the other components are added to the filtered solution in the order indicated.

EXAMPLE 3

Water	44.62 g
Marine salt	15.00 g
Saccharine sodium salt	0.08 g
Cyclamate sodium	0.80 g
Glycerine	5.00 g
Natrosol 250 MR	1.00 g
Pluronic F 68	0.50 g
Dicalcium phosphate dihydrate	5.00 g
Insoluble sodium metaphosphate	25.00 g
Aerosil unpressed	2.00 g
Tooth paste flavouring	1.00 g

The marine salt and the saccharine sodium salt are dissolved in water and the other components are then added in the order indicated to the filtered solution.

EXAMPLE 4

Water	44.45 g
Marine salt	15.00 g
Saccharine sodium salt	0.10 g
Cyclamate sodium	0.70 g
Sorbitol solution 70%	5.00 g
Natrasol 250 MR	1.00 g
Pluronic F 68	0.50 g
Dicalcium phosphate dihydrate	20.00 g
Dicalcium phosphate anhydrate	10.00 g
Aerosil unpressed	2.50 g
Tooth paste flavouring	0.75 g

Here also the marine salt and the saccharine sodium salt are first dissolved in water and the other components are added afterwards in the order indicated first to the filtered solution, and then to the resulting paste.

In all these examples the marine salt can also be replaced by ordinary salt.

WHAT WE CLAIM IS:—

1. Tooth paste, characterised by a content of concentrated aqueous sodium chloride solution in admixture with moisture retaining agents, gelling agents which gell in concentrated salt solutions, abrasives usual in tooth pastes, slightly surface active substances corresponding to a surface tension of 45—60 dyn/cm after dispersion of 1 part of paste in 20 parts of water and, if desired, with 0.03—0.2% of saccharine (sodium salt) and/or 0.3—1.5% of cyclamate sodium and, if desired, flavourings and other additives.

2. Tooth pastes according to claim 1, characterised by a content 12—17% of sodium chloride.

3. Tooth paste according to claim 1, characterised by a content of 0.5—2.5% of hydroxyethyl cellulose as gelling agent which gells in concentrated salt solutions.

4. Tooth paste according to claim 1, characterised by a content of 0.03—0.2% of saccharine sodium salt and/or 0.3—1.5% of cyclamate sodium.

5. Tooth paste according to claim 1, characterised by a content of 0.5—1.2% of a mixture of saccharine sodium salt and cyclamate sodium in a proportion of from 1:7 to 1.12 by weight.

6. Tooth paste as claimed in claim 1 substantially as hereinbefore described in any one of the Examples.

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Cyclamate sodium	0.70 g
Sorbitol solution 70%	5.00 g
Natrasol 250 MR	1.00 g
Pluronic F 68	0.50 g
Dicalcium phosphate dihydrate	20.00 g
Dicalcium phosphate anhydrate	10.00 g
Aerosil unpressed	2.50 g
Tooth paste flavouring	0.75 g

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