

(12) PATENT
(19) AUSTRALIAN PATENT OFFICE

(11) Application No. AU 199888590 B2
(10) Patent No. 740042

(54) Title
oral and dental hygiene products for sensitive teeth

(51)⁶ International Patent Classification(s)
A61K 007/00

(21) Application No: **199888590** (22) Application Date: **1998 .07 .08**

(87) WIPO No: **WO99/03445**

(30) Priority Data

| (31) Number | (32) Date | (33) Country |
|-----------------|---------------------|--------------|
| 19730651 | 1997 .07 .17 | DE |

(43) Publication Date : **1999 .02 .10**

(43) Publication Journal Date : **1999 .04 .01**

(44) Accepted Journal Date : **2001 .10 .25**

(71) Applicant(s)
Henkel Kommanditgesellschaft Auf Aktien

(72) Inventor(s)
Hans Theo Leinen; Peter Wulknitz

(74) Agent/Attorney
SPRUSON and FERGUSON,GPO Box 3898,SYDNEY NSW 2001

(56) Related Art
US 3888976
US 4407675

OPI DATE 10/02/99 APPLN. ID 88590/98
AOJP DATE 01/04/99 PCT NUMBER PCT/EP98/04245



AU9888590

| | | |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|
| (51) Internationale Patentklassifikation 6 : A61K 7/00 | A2 | (11) Internationale Veröffentlichungsnummer: WO 99/03445 (43) Internationales Veröffentlichungsdatum: 28. Januar 1999 (28.01.99) |
| (21) Internationales Aktenzeichen: PCT/EP98/04245 (22) Internationales Anmeldedatum: 8. Juli 1998 (08.07.98) (30) Prioritätsdaten: 197 30 651.9 17. Juli 1997 (17.07.97) DE (71) Anmelder (für alle Bestimmungsstaaten ausser US): HENKEL KOMMANDITGESELLSCHAFT AUF AKTIEN [DE/DE]; Henkelstrasse 67, D-40589 Düsseldorf (DE). (72) Erfinder; und (75) Erfinder/Anmelder (nur für US): LEINEN, Hans, Theo [DE/DE]; Gertrudisstrasse 2, D-40229 Düsseldorf (DE). WÜLKKNITZ, Peter [DE/DE]; Im Erlengrund 9, D-42799 Leichlingen (DE). | (81) Bestimmungsstaaten: AU, CA, CN, CZ, HU, JP, KR, NO, PL, SK, US, europäisches Patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE). Veröffentlicht <i>Ohne internationalen Recherchenbericht und erneut zu veröffentlichen nach Erhalt des Berichts.</i> | |
| (54) Title: ORAL AND DENTAL HYGIENE PRODUCTS FOR SENSITIVE TEETH (54) Bezeichnung: MUND- UND ZAHNPFLEGE MITTEL FÜR EMPFINDLICHE ZÄHNE (57) Abstract The invention relates to oral and dental hygiene products consisting of aqueous, aqueous-alcoholic or anhydrous preparations containing an active combination of a water-soluble potassium or strontium salt and eugenol or oil of cloves, for desensitizing sensitive teeth. Said combination contains preferably at least 0.5 wt. % potassium or strontium ions, e.g. in the form of the nitrate, and at least 0.01 wt. % eugenol, preferably in the form of oil of cloves. Desensitizing toothpastes contain an additional 5-50 wt. % of a polishing agent, 1 wt. % thereof being dicalcium phosphate dihydrate and 10-60 wt. % being a humectant, and preferably 0.1-0.5 wt. % magnesium in the form of a dissolved salt and 0.2-2 wt. % monofluorophosphate. (57) Zusammenfassung Mund- und Zahnpflegemittel in Form von wäßrigen, wäßrig-alkoholischen oder wasserfreien Zubereitungen enthalten zur Desensibilisierung empfindlicher Zähne eine Wirkstoffkombination aus einem wasserlöslichen Kalium- oder Strontiumsalz und Eugenol oder Nelkenknospenöl. Bevorzugt sind wenigstens 0,5 Gew.-% Kalium- oder Strontium-Ionen, z.B. in der Form des Nitrats, und wenigstens 0,01 Gew.-% Eugenol, bevorzugt in der Form des Nelkenknospenöls, enthalten. Desensibilisierende Zahnpasten enthalten zusätzlich 5 - 50 Gew.-% eines Poliermittels, davon wenigstens 1 Gew.-% Dicalciumphosphat-dihydrat und 10 - 60 Gew.-% eines Feuchthaltemittels sowie bevorzugt 0,1 - 0,5 Gew.-% Magnesium in Form eines gelösten Salzes und 0,2 - 2 Gew.-% Monofluorophosphat. | | |

Oral and Dental Hygiene Products for Sensitive Teeth

This invention relates to oral and dental care compositions in the form of toothpaste or tooth cream containing a combination of active ingredients for reducing the sensitivity of the teeth to mechanical and thermal stimuli.

5 Many people suffer from extreme sensitivity of the teeth, more particularly in and around the neck region, and experience an unpleasant feeling to the point of pain when the teeth are exposed to a thermal or mechanical stimulus, for example during the consumption of cooled foods or drinks or on contact with a toothbrush.

10 It is known that water-soluble salts of potassium and strontium can reduce this sensitivity to a certain extent. For example, DE 24 19 384 recommends an addition of potassium nitrate while US 3,122,483 recommends the addition of strontium chloride to toothpastes.

The use of clove oil and its main constituent, eugenol, as a flavouring oil with antibacterial properties in oral and dental care compositions has also been known for some time, for example from DE 24 45 676 C2.

15 However, it has now been found that the presence of eugenol or clove oil considerably increases the desensitising effect of potassium or strontium salts on oversensitive teeth. More particularly, a more rapid onset of the effect was observed. Eugenol had not hitherto been known to have such a potentiating effect in conjunction with other desensitising agents.

20 Accordingly, the present invention relates to oral and dental care compositions in the form of toothpaste or tooth cream which contain a combination of a water-soluble potassium or strontium salt and eugenol or clove oil as active ingredients for desensitising sensitive teeth. In particular the present invention relates to an oral and dental care composition in the form of toothpaste or tooth cream containing 5 to 50wt% of a polishing material and 10 to 60wt% of a humectant, wherein the composition contains a combination of a water-soluble potassium or strontium salt and eugenol or clove oil as active ingredients for desensitising sensitive teeth preferably at least 1wt% of dicalcium phosphate dihydrate is present as a component of the polishing material.

25 While the oral and dental care compositions according to the invention may be formulated as toothpastes, liquid tooth creams, tooth powders, mouthwashes or even as chewing compositions, for example chewing gum, are preferably formulated as more or less free-flowing or plastic toothpastes which are used for cleaning the teeth with a toothbrush.

The ready-to-use preparations preferably contain at least 0.5wt% of potassium or strontium ions in the form of a dissolved salt and at least 0.01wt% of eugenol either in pure form or in the form of clove oil. Clove oil generally contains 70 to 90wt% of eugenol besides 10 to 15wt% of eugenol acetate (odour component) and relatively small amounts of alcohols, methyl esters, ketones and sesquiterpenes.

35 Suitable water-soluble salts of potassium are, for example, potassium chloride, potassium sulfate, potassium bicarbonate, potassium citrate, potassium acetate, potassium lactate and potassium nitrate. Potassium nitrate is particularly suitable.

Suitable water-soluble salts of strontium are strontium chloride, strontium nitrate, strontium citrate, strontium acetate and strontium lactate.

The salts of potassium or strontium are preferably used in a quantity of 0.5 to 10wt% (expressed as K or Sr ion).



The eugenol may also be present in the oral and dental care preparations in admixture with other flavouring oils. It is preferably present in the compositions in the form of clove oil in a quantity of 0.01 to 1wt% (expressed as eugenol).

Toothpastes or liquid tooth creams according to the invention contain a polishing material, typically in a quantity of 5 to 50wt%, and a humectant, usually in a quantity of 10 to 60wt%.

Suitable polishing materials are any of the abrasives known for toothpastes such as, for example, silicas, aluminium hydroxide, aluminium oxide, calcium pyrophosphate, chalk, dicalcium phosphate dihydrate, sodium aluminium silicates, for example zeolite A, organic polymers, for example polymethacrylate, or mixtures of these abrasives. The addition of a polishing material which itself has a restoring effect on lesions and open dentinal tubules, namely dicalcium phosphate dihydrate, has proved to be particularly suitable. Dicalcium phosphate dihydrate ($\text{CaHPO}_4 \cdot 2\text{H}_2\text{O}$) occurs in nature as brushite and is commercially available in suitable particle sizes of 1 to 50 μm .

A particularly effective combination of polishing materials consists of 10 to 20wt% of silica and 1 to 10wt% of dicalcium phosphate dihydrate (the percentages by weight being based on the final toothpaste).

Suitable silica polishes are any silica gels, silica hydrogels and precipitated silicas known as polishes. Silica gels are obtained by reacting sodium silicate solutions with strong aqueous mineral acids to form a hydrosol, ageing to form the hydrogel, washing and drying. If drying is carried out under moderate conditions to a water content of 15 to 35wt%, the so-called silica hydrogels known, for example, from **US 4,153,680** are obtained. Drying to water contents below 15wt% results in irreversible shrinkage of the previously loose structure of the hydrogel to the dense structure of the so-called xerogel. Silica xerogels are described, for example, in **US 3,538,230**.

A second preferred group of silica polishes are the precipitated silicas. These are obtained by precipitation of silica from dilute alkali metal silicate solutions by addition of strong acids under conditions where aggregation to the sol and gel cannot occur. Suitable processes for the production of precipitated silicas are described, for example, in **DE-OS 25 22 486** and in **DE-OS 31 14 493**. A precipitated silica produced in accordance with **DE-OS 31 14 493** with a BET surface of 15 to 110 m^2/g , a particle size of 0.5 to 20 μm (at least 80wt% of the primary particles should be below 5 μm in size) and a viscosity in the form of a 30% glycerol/water (1:1) dispersion of 30 to 60Pa.s (20°C) in a quantity of 10 to 20wt% of the toothpaste is particularly suitable.

In addition, preferred precipitated silicas have rounded corners and edges and are commercially available as Sident® 12 DE (Degussa AG).

In order to obtain a sufficiently high percentage of silicas with a mean particle size below 5 μm and more particularly at least 3wt%, based on the toothpaste as a whole, of silica with a primary particle size of 1 to 3 μm , the precipitated silica mentioned is preferably used in conjunction with a finer-particle type having a BET surface of 150 to 250. A suitable silica of this type is, for example, Sipernat® 22 LS (Degussa AG) which is used in a quantity of 1 to 5wt% of the toothpaste.

In order to obtain a smooth tooth surface, it has proved to be of particular advantage for the toothpaste according to the invention to contain small quantities of freshly precipitated silica, ie. silica produced *in situ* during production of the toothpaste. This may be achieved, for example, by



maintaining a pH of 3 to 5 in the production of the toothpaste, for example by addition of citric acid, and then increasing the pH to 7 – 7.5 by addition of small quantities of an aqueous sodium silicate solution. The silica thus formed in situ consists of extremely fine particles and makes up less than 0.1wt% of the toothpaste.

5 Another polishing component may be, for example, aluminium oxide in the form of lightly calcined alumina containing both γ - and α -aluminium oxide which may be present in a quantity of about 1 to 5wt%. A suitable aluminium oxide such as this is commercially available as "Poliertonerde P10 feinst" (Giulini Chemie).

10 It has also been found that magnesium ions have a favourable influence on the controlled crystal growth of the hydroxyapatite growing in the dental lesions, promote the accelerated hardening of the dental enamel and therefore make another contribution towards solving the problem addressed by the invention. Accordingly, the present invention also relates to a toothpaste which contains a water-soluble magnesium salt in a quantity corresponding to 0.1 to 0.5wt% of Mg. Suitable magnesium salts are any salts of which at least 0.5wt% (expressed as Mg) is soluble in water at 20°C, for example
15 $MgSO_4$, $MgCl_2$ and magnesium monofluorophosphate ($MgPO_3F$).

Finally, it has been found that fluorophosphate ions also have a favourable influence on the controlled crystal growth of hydroxyapatite. Accordingly, toothpastes according to the invention which contain a monofluorophosphate in a quantity corresponding to 0.2 - 2.0wt% (PO_3F^-) as fluorine compound are preferred. The alkali metal salts for example (for example the commercially available
20 sodium monofluorophosphate) are suitable for this purpose. The preferred content of magnesium ions and fluorophosphate ions can be established with particular advantage through the presence of magnesium monofluorophosphate as the fluorine compound.

A suitable carrier for the toothpastes according to the invention, which enables a suitable consistency for dosing from tubes, dispensers or flexible bottles to be established on the basis of the
25 polishing material combination according to the invention, is a combination of humectants, binders and water. Suitable humectants are, for example, glycerol, sorbitol, xylitol, propylene glycols, polyethylene glycols, more particularly those with average molecular weights of 200 to 800. Suitable consistency regulators (or binders) are, for example, natural and/or synthetic water-soluble polymers, such as alginates, carrageenates, tragacanth, starch and starch ethers, cellulose ethers such as, for example,
30 carboxymethylcellulose (Na salt), hydroxyethylcellulose, methylhydroxypropylcellulose, guar, acacia gum, agar-agar, xanthan gum, succinoglycan gum, locust bean gum, pectins, water-soluble carboxyvinyl polymers (for example Carbopol® types), polyvinyl alcohol, polyvinylpyrrolidone, polyethylene glycols, more particularly those having molecular weights of 1500 to 1 000 000.

Other substances suitable for controlling viscosity are, for example, layered silicates such as, for
35 example, montmorillonite clays, colloidal thickening silicas such as, for example, Aerogel silicas, pyrogenic silicas or very finely ground precipitated silicas.

The toothpastes may also be formulated with such low viscosities that they may be applied to the toothbrush from a flexible plastic bottle as "tooth cleaning liquids" with a viscosity of 2000 to
10 000mPa·s (25°C) which penetrate between the bristles of, but do not drip from, the toothbrush. A preferred binder for this purpose is a combination of 0.1 to 1wt% of xanthan gum and 0.01 to 5wt% of a



viscosity-stabilising additive from the group of cationic, zwitterionic or ampholytic nitrogen-containing surfactants hydroxypropyl-substituted hydrocolloids or polyethylene glycol/polypropylene glycol copolymers with an average molecular weight of 1000 to 5000 or a combination of the compounds mentioned.

5 The toothpastes according to the invention also contain surface-active agents to support their cleaning effect and, if desired, to generate foam during brushing of the teeth and also to stabilise the dispersion of polishing materials in the carrier in a quantity of 0.1 to 5wt%.

Suitable surfactants are, for example, linear sodium alkyl sulfates containing 12 to 18 carbon atoms in the alkyl group. These surfactants also have an enzyme-inhibiting effect on the bacterial
10 metabolism of the tartar. Other suitable surfactants are alkali metal salts, preferably sodium salts, of alkyl polyglycol ether sulfate containing 12 to 16 carbon atoms in the linear alkyl group and 2 to 6 glycol ether groups in the molecule, of linear alkane (C₁₂₋₁₈) sulfonate, of sulfosuccinic acid monoalkyl (C₁₂₋₁₈) esters, of sulfated fatty acid monoglycerides, sulfated fatty acid alkanolamides, sulfoacetic acid alkyl (C₁₂₋₁₆) esters, acyl sarcosines, acyl taurides and acyl isethionates containing 8 to 18 carbon atoms in
15 the acyl group. Zwitterionic, ampholytic and nonionic surfactants, for example ethoxylates of fatty acid mono- and diglycerides, of fatty acid sorbitan esters and alkyl (oligo)glucosides, are also suitable.

Other typical toothpaste additives are preservatives and antimicrobial agents such as, for example, p-hydroxybenzoic acid methyl, ethyl or propyl ester, sodium sorbate, sodium benzoate, bromochlorophene, triclosan, phenylsalicylic acid
20 ester, biguanides, for example chlorhexidine, thymol, etc., sweeteners such as, for example, saccharin sodium, sodium cyclamate, sucrose, lactose, maltose, fructose, flavourings such as, for example, peppermint oil, spearmint oil, eucalyptus oil, aniseed oil, fennel oil, caraway oil, menthyl acetate, cinnamaldehyde, anethol, vanillin, thymol and mixtures of these and other
25 natural and synthetic flavourings, pigments such as titanium dioxide for example, dyes, buffers such as, for example, primary, secondary or tertiary alkali metal phosphates or citric acid/sodium citrate,
30 wound-healing and anti-inflammatory agents such as, for example, allantoin, urea and azulene, active substances from camomile, acetyl salicylic acid derivatives.

In mouthwashes, the carrier consists essentially of water, ethanol, essential oils, emulsifiers and solubilisers for the eugenol and the other flavouring components, taste correctants (for example sweetener) and optionally astringent or invigorating drug extracts and optionally dyes. Besides the
35 desensitising potassium or strontium salt and the eugenol, antimicrobial agents, for example chlorhexidine and triclosan, may be present as further active ingredients.

The following Examples are intended to illustrate the invention.

Examples

The following oral and dental care compositions were prepared:



1. Toothpastes

| | 1 | 2 | 3 | 4 |
|----------------------------------------------------------|--------|--------|--------|--------|
| Precipitated silica: Sident® 12 DS | 10.0 | 12 | 15 | 18 |
| Precipitated silica: Sipernat® 22 LS | 3.0 | 3.0 | - | - |
| Poliertonerde P10 feinst (1) | - | - | - | 1.0 |
| Dicalcium phosphate dihydrate | 4.0 | 4.0 | - | - |
| MgSO ₄ ·7H ₂ O | 1.7 | 1.4 | - | - |
| Na monofluorophosphate Na ₂ PO ₃ F | 1.2 | 0.8 | 0.5 | 0.6 |
| KNO ₃ (water-free) | 5.0 | 4.0 | 4.5 | 3 |
| Glycerol (86% DAB) | 21.0 | 18.0 | 10 | 17.5 |
| Sorbitol (70% DAB) | 20.0 | 14.0 | 5 | 17.5 |
| Polyethylene glycol (MW: 400) | 2.0 | 2.0 | 1.0 | 1.0 |
| Thickening silica (FK 320 DS) | 1.0 | 1.0 | 5.0 | 0.8 |
| Xanthan gum (Keltrol® F) | 0.6 | 0.6 | 0.6 | 0.5 |
| Titanium dioxide | 1.0 | 1.0 | - | - |
| Na lauryl sulfate | 1.5 | 1.5 | - | 2.0 |
| Tego Betain BL 215 (2) | 0.6 | 0.6 | - | - |
| Trisodium citrate | 0.2 | 0.2 | - | - |
| Saccharin Na | 0.2 | 0.2 | 0.1 | 0.2 |
| Clove oil | 0.05 | 0.1 | 0.07 | 0.1 |
| Flavouring | 1.0 | 0.8 | 0.1 | 1.0 |
| Cremonophor RH60 (3) | - | - | 0.2 | - |
| Water | to 100 | to 100 | to 100 | to 100 |

2. Liquid tooth cream

| | 5 |
|---------------------------------------------|------|
| Precipitated silica (Sident 12 DS) | 12.0 |
| NaF | 0.25 |
| KNO ₃ | 5.0 |
| Na ₂ HPO ₄ | 0.2 |
| Xanthan gum (Keltrol F) | 0.2 |
| Azacycloheptane-2,2-diphosphonate (Na salt) | 1.0 |
| Saccharin-Na | 0.2 |
| Ethanol | 5.0 |
| Glycerol | 28.0 |
| Sorbitol | 22.0 |
| Polyethylene glycol (MW: 400) | 3.0 |
| PEG 30 – glycerol monostearate | 1.0 |
| Tego Betain BL 215 (2) | 0.8 |
| Flavouring oil | 1.0 |
| Clove oil | 0.1 |

3. Mouthwash (ready-to-use)

| | 6 |
|-----------------------------------|--------|
| Ethanol | 5.0 |
| Chlorhexidine gluconate | 0.03 |
| Plantaren 2000 (4) | 0.05 |
| Na ₂ PO ₃ F | 0.25 |
| KNO ₃ | 4.0 |
| Saccharin Na | 0.05 |
| Sorbitol | 3.0 |
| Cremonophor RH 60 (3) | 0.1 |
| Flavouring oil (peppermint oil) | 0.1 |
| Clove oil | 0.05 |
| Dye (blue, C.J. 42090) | 0.1 |
| Water | to 100 |



The following commercial products were used:

| | |
|-------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|
| (1) Poliertonerde P10 feinst: | lightly calcined alumina (ca. 20wt% γ -aluminium oxide, ca. 80wt% α -aluminium oxide, primary crystal size 0.5-1.5 μ m) |
| (2) Tego® Betain BL 215: | 30% solution of Cocoamidopropyl Betaine in water |
| (3) Cremophor® RH 60: | hydr. castor oil + 60 moles EO |
| (4) Plantaren 2000: | alkyl-(C ₈₋₁₆)-oligo-(1,4)-glucoside (50% solution in water) |

Clinical tests

The following were used in clinical comparisons:

- E = Example 1
 5 C1 = Example 1 with no clove oil (replaced by water)
 CM = Sensitive toothpaste (commercial product)

Method:

10 Three test groups each comprising 50 volunteers were formed. Tooth sensitivity was determined by a dentist at the beginning of the study and after the 8-week study period. At the same time, individual evaluations were made on a questionnaire.

The dental test was conducted with an air jet directed onto the tooth neck.

The study was a double-blind study. Before the beginning of the test, the teeth were cleaned twice a day with a neutral toothpaste containing no desensitising additives. During the test phase, each of the test groups applied one of the three test creams twice daily in the usual way.

15 Only those volunteers were used as test subjects who, in the first test, showed a tooth sensitivity corresponding to a score of 2 or higher.

Evaluation was based on a scoring scale of 0 to 5 where

- 0 = completely non-sensitive
 1 = very little sensitivity
 20 2 = slight sensitivity
 3 = medium sensitivity
 4 = high sensitivity
 5 = very high sensitivity.

A statistical group comparison was carried out by the Peto-Wilcoxon log rank test.

25 Table 1 below shows the results of the sensitivity test for those people who completed the test to the end.

Table I

| Evaluation | Group E | | Group C1 | | Group CM | |
|------------|---------|-----|----------|-----|----------|-----|
| | Start | End | Start | End | Start | End |
| 0 | - | 1 | - | 1 | - | 3 |
| 1 | 0 | 13 | 2 | 8 | 2 | 6 |
| 2 | 14 | 16 | 7 | 8 | 4 | 5 |
| 3 | 21 | 9 | 13 | 16 | 8 | 8 |
| 4 | 6 | 4 | 12 | 5 | 14 | 13 |
| 5 | 3 | 1 | 9 | 5 | 17 | 10 |
| Total | 44 | 44 | 43 | 43 | 45 | 45 |



The following Tables show the number of test subjects in each group who passed from a certain score (1-5) before the start of the test (vertical) to a certain score (1-5) at the end of the test (horizontal).

It can be seen that, in the group who tested the product according to the invention (group E), only 5 subjects attained a score of 4 or 5 at the end of the study while 30 subjects attained a score of 0 to 2.

Table II

| Product: E | | | | | | | |
|--------------|---|----|----|---|---|---|-------|
| Before/after | 0 | 1 | 2 | 3 | 4 | 5 | Total |
| 0 | | | | | | | |
| 1 | | | | | | | |
| 2 | | 6 | 7 | 1 | | | 14 |
| 3 | 1 | 4 | 8 | 7 | 1 | | 21 |
| 4 | | 1 | 1 | 1 | 2 | 1 | 6 |
| 5 | | 2 | | | 1 | | 3 |
| Total | 1 | 13 | 16 | 9 | 4 | 1 | 44 |

Table III

| Product: C1 | | | | | | | |
|--------------|---|---|---|----|---|---|-------|
| Before/after | 0 | 1 | 2 | 3 | 4 | 5 | Total |
| 0 | | | | | | | |
| 1 | | | 1 | | | 1 | 2 |
| 2 | | 2 | 2 | 2 | 1 | | 7 |
| 3 | | 5 | 2 | 3 | 1 | 2 | 13 |
| 4 | 1 | 1 | 1 | 7 | 2 | | 12 |
| 5 | | | 2 | 4 | 1 | 2 | 9 |
| Total | 1 | 8 | 8 | 16 | 5 | 5 | 43 |

Table IV

| Product: CM | | | | | | | |
|--------------|---|---|---|---|----|----|-------|
| Before/after | 0 | 1 | 2 | 3 | 4 | 5 | Total |
| 0 | | | | | | | |
| 1 | 1 | 1 | | | | | 2 |
| 2 | | 2 | 2 | | | | 4 |
| 3 | 1 | 2 | 1 | 3 | 1 | | 8 |
| 4 | 1 | 1 | 2 | 5 | 4 | 1 | 14 |
| 5 | | | | | 8 | 9 | 17 |
| Total | 3 | 6 | 5 | 8 | 13 | 10 | 45 |

10



The claims defining the invention are as follows:

1. An oral and dental care composition in the form of a toothpaste or tooth cream containing 5 to 50wt% of a polishing material and 10 to 60wt% of a humectant, wherein the composition contains a combination of a water-soluble potassium or strontium salt and eugenol or clove oil as active ingredients for desensitising sensitive teeth.
2. An oral and dental care composition as claimed in claim 1, wherein the ready-to-use preparation contains at least 0.5wt% of potassium or strontium ions and at least 0.01wt% of eugenol.
3. An oral and dental care composition as claimed in claim 2, characterised in that the eugenol is in the form of clove oil.
4. An oral and dental care composition as claimed in any one of claims 1 to 3, wherein at least 1wt% of dicalcium phosphate dihydrate is present as a component of the polishing material.
5. An oral and dental care composition as claimed in any one of claims 1 to 4, characterised in that a water-soluble magnesium salt is additionally present in a quantity of 0.1 to 0.5wt% Mg.
6. An oral and dental care composition as claimed in any one of claims 1 to 5, characterised in that a fluorine compound, is present in a quantity corresponding to 0.2 to 2.0wt% (PO_3F).
7. An oral and dental care composition as claimed in claim 6, characterised in that the fluorine compound is a monofluorophosphate.
8. An oral and dental care composition in the form of a toothpaste or tooth cream, the composition being substantially as hereinbefore described with reference to Example 1 or Example 2, but excluding any comparative examples.

Dated 13 August 2001**HENKEL KOMMANDITGESELLSCHAFT AUF AKTIEN****Patent Attorneys for the Applicant/Nominated Person
SPRUSON & FERGUSON**