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[Continued on next page]

(54) Title: IMPROVED COSMETIC COMPOSITION



A



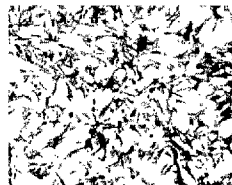
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(57) Abstract: A skin care cosmetic composition comprising: a. 0.05 % to 5 % by weight vitamin B12 or a derivative thereof; b. 0.1 % to 10 % by weight of a skin lightening vitamin chosen from niacinamide, pyridoxine or precursors thereof; c. up to 10 % by weight sunscreen; and d. 10 % to 99 % by weight of a cosmetically acceptable vehicle or 15 % to 85 % by weight detergent active.

B16 cells stained with ammoniacal silver nitrate
(Fontana Masson method) with and without treatment with
various concentrations of vitamin B12

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IMPROVED COSMETIC COMPOSITION

The present invention relates to a synergistic skin composition comprising a skin lightening active. In particular, the invention relates to synergistic skin compositions comprising vitamin B12 (cyanocobalamin) and its functional and structural analogues (e.g. hydroxocobalamin) as skin lightening actives. The invention also pertains to synergistic skin compositions comprising vitamin B12 and skin lightening actives/sunscreens. The compositions of the invention are suitable for controlling skin colour.

The endogenous pigment of skin and hair is called melanin. In all pigmented animals there are two basic types of melanin; the brown/red type, or pheomelanin, and the black type, or eumelanin.

Melanin is synthesized in melanosomes from the amino acid tyrosine via DOPA and dopaquinone. The enzyme tyrosinase is required in these early steps. After the tyrosinase steps, the pathways to produce black, brown and red pigments diverge, and involve many other enzymes.

The melanogenesis process also involves the development of melanosomes, the organelle of the melanocyte in which the melanin is synthesised, and the subsequent transfer of the melanosomes to keratinocytes.

Skin colour is dependent on the amount and type of melanin, and the size and distribution patterns of melanosomes within keratinocytes.

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External agents are known to alter skin colour. Agents that lighten or whiten skin colour are reported in the prior art, and are used extensively in cosmetic formulations. These
5 include niacinamide, carboxylic acids like azelaic acid and kojic acid, plant extracts and hydroquinone etc.

Vitamin B3 (nicotinic acid or its amide) is one of the most effective and safe skin-lightening agents. Other vitamins
10 like Vitamin C or its derivatives, and Vitamin B6 are also known to effect skin lightening.

Ultraviolet radiation (UVR) stimulates the generation of tyrosinase, and thus pigmentation. Organic sunscreens are
15 molecules that absorb in the UV region, and thus prevent the action of UVR. Sunscreens can therefore help in controlling skin colour.

EP0396422 (Unilever) discloses a skin lightening
20 composition, comprising niacinamide, Parsol MCX and Parsol 1789, UV-B and UV-A sunscreens, as well as silicone oil in the skin lightening composition. The composition gives enhanced skin lightening.

25 US20020006418 (John Kung, Jue-Chen Liu, Susan Niemiec) discloses skin compositions comprising a polymeric emulsifier and a sugar that enhance the penetration of topical benefit agents into the skin. Cosmetic benefit agents that can be effectively delivered by the composition
30 include vitamin B6 and B12.

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WO0191715 (PentaPharm Ltd., Ezaki Glico Co. Ltd.) teaches skin lightening compositions comprising 4-Hydroxyphenyl- α -D-glucopyranoside combined with other active ingredients, including pyridoxine or Vitamin B6.

5

JP04009325 (SunStar Inc.) and JP60188306 (Shiseido Co. Ltd.) also disclose skin whitening compositions comprising pyridoxine.

10 The Journal of Dermatology, Vol28: 282-285, 2001 (Katsunori Mori, Iwao Ando and Atsushi Kukita) addresses generalised acquired hyper-pigmentation due to vitamin B12 deficiency. A 49 year old patient with symptoms of hyper-pigmentation due to mal-absorption of vitamin B12 resulting from a
15 gastrectomy was treated with vitamin B12 supplements to reduce the hyper-pigmentation.

US-A-2002/0035087 (Barclay) described the use of vitamin B12, plus optionally other vitamins such as vitamin B3 for
20 the reduction of UV damage to cells.

Thus, the prior art is generally directed towards treatment of conditions like hyper-pigmentation with vitamin B12. Further, skin compositions comprising vitamin B12 as
25 disclosed in the prior art do not teach that topical application of vitamin B12 can promote skin lightening.

The present applicants have now surprisingly found that skin compositions comprising vitamin B12 can lighten the skin

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significantly, and in combination with a benefit agent selected from other skin lightening vitamins and sunscreens shows enhanced and synergistic skin lightening. The topical compositions are useful both for normal skin as well as skin
5 damaged by UVR. The compositions are also useful in treating freckles, hyper-pigmented skin, blotchy skin, age spots etc.

Thus, according to the first aspect of the invention, there
10 is provided a synergistic skin lightening composition comprising:

- a. an effective amount of vitamin B12 or derivative thereof
- b. a cosmetically acceptable vehicle or 15-85% detergent
15 active

According to a preferred aspect of the invention, there is provided a skin lightening composition comprising:

- 20 a. 0.05-5% by weight of vitamin B12 or a derivative thereof
- b. a skin lightening vitamin chosen from niacinamide, pyridoxine or their precursors thereof
- c. optionally a sunscreen and/or a sun-block
- d. a cosmetically acceptable vehicle or 15-85% detergent
25 active.

According to a further preferred aspect of the invention, there is provided a skin lightening composition comprising

- 30 a. 0.1 to 1 % by weight vitamin B12 or a derivative thereof

- 5 -

- b. 0.1% to 10% by weight of a skin lightening vitamin chosen from niacinamide, pyridoxine or their precursors thereof
- c. 0.1 to 10 % sunscreen
- d. a cosmetically acceptable vehicle or 15-85% soap.

5

All parts herein are by weight unless otherwise specified.

The present invention pertains to synergistic skin lightening compositions comprising vitamin B12 and a benefit agent chosen from other skin lightening vitamins and sunscreens or their mixtures thereof. The compositions according to the invention give enhanced skin lightening.

The compositions of the invention can be leave on products in the form of lotions, creams, gels, mousses etc. or in the form of rinse off products like soap bar, detergent powders, flakes, face wash, body wash etc.

It is an essential feature of the invention that Vitamin B12 or its derivative thereof be present in the skin lightening composition of the invention. Vitamin B12 is exclusively synthesised by bacteria and naturally found in animal foods including fish, milk and milk products, eggs, meat, and poultry. Fermented soya products, seaweeds, and algae such as spirulina have all been suggested as containing significant B12. However, the present consensus is that any B12 present in plant foods is likely to be unavailable to humans, and so these foods should not be relied upon as safe sources.

30

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Spirulina, an algae available as a dietary supplement in tablet form, and nori, a seaweed, have both appeared to contain significant amounts of B12 after analysis. However, it is thought that this is due to the presence of compounds structurally similar to B12, known as B12 analogues. These cannot be utilised to satisfy dietary needs. Researchers have suggested that supposed B12 supplements such as spirulina may in fact increase the risk of B12 deficiency disease, as the B12 analogues can compete with B12 and inhibit metabolism. It is thus possible to choose B12 available from any known source that may be natural or synthetic commercially available source.

Vitamin B12 is typically incorporated at 0.05% to 5 % by weight of the composition, and is preferably present in an amount from 0.1 % to 1 % by weight of the cosmetic composition.

Other skin lightening vitamins can be advantageously included in the composition to provide for synergistic skin lightening effects. These include vitamin B3, vitamin B6, vitamin C, vitamin A or their precursors. Mixtures of the vitamins can also be employed in the composition of the invention. Especially preferred vitamins are vitamin B3 and vitamin B6.

When a mixture of vitamins is used, it is preferred that the total amount of vitamins does not exceed 10 % by weight of the cosmetic composition.

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The composition of the invention preferably includes an effective amount of a sunscreen or sun-block agent to enhance synergistically the benefit of the composition in providing for skin lightening. Organic and inorganic
5 sunscreens/sun-blocks may be suitably employed in the composition.

Ultraviolet light is a predominant cause of skin darkening. Thus, for purposes of skin lightening, compositions
10 comprising UVA and/or UVB sunscreen are desirable.

A wide variety of conventional sunscreen agents are suitable for use in combination with Vitamin B12 and/or other skin lightening vitamins. Suitable sunscreen agents include, p-
15 aminobenzoic acid, its salts and its derivatives (ethyl, isobutyl, glyceryl esters; p-dimethylaminobenzoic acid); anthranilates (i.e., o-aminobenzoates; methyl, menthyl, phenyl, benzyl, phenylethyl, linalyl, terpinyl, and cyclohexenyl esters); salicylates (amyl, phenyl, benzyl,
20 menthyl, glyceryl, and dipropyleneglycol esters); Cinnamic acid derivatives (menthyl and benzyl esters, a-phenyl cinnamitrile; butyl cinnamoyl pyruvate); dihydroxycinnamic acid derivatives (umbelliferone, methylumbelliferone, methylaceto-umbelliferone); trihydroxycinnamic acid
25 derivatives (esculetin, methylesculetin, daphnetin, and the glucosides, esculin and daphnin); hydrocarbons (diphenylbutadiene, stilbene); dibenzalacetone and benzalacetophenone; naphthol-sulfonates (sodium salts of 2-naphthol-3,6- disulfonic and of 2-naphthol-6,8-disulfonic
30 acids); di-hydroxy-naphthoic acid and its salts; o- and p-Hydroxybiphenyldisulfonates; coumarin derivatives (7-

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hydroxy, 7-methyl, 3-phenyl); diazoles (2-acetyl-3-bromoindazole, phenyl benzoxazole, methyl naphthoxazole, various aryl benzothiazoles); quinine salts (bisulfate, sulfate, chloride, oleate, and tannate); quinoline
5 derivatives (8-hydroxyquinoline salts, 2-phenylquinoline); hydroxy- or methoxy-substituted benzophenones; uric and vilouric acids; tannic acid and its derivatives (e.g., hexaethylether); (butyl carbotol) (6-propyl piperonyl) ether; hydroquinone; benzophenones (oxy-benzene,
10 sulisobenzone, dioxybenzone, benzoescorcinol, 2,2',4,4'-tetrahydroxybenzophenone, 2,2'-dihydroxy-4,4'-dimethylbenzophenone, octabenzone; 4-isopropyl-dibenzoylmethane; butyl-methoxydibenzoylmethane; etocrylene; and 4-isopropyl-di-benzoylmethane.

15

Of these, 2-ethylhexyl-p-methoxycinnamate, 4,4'-t-butyl methoxydibenzoyl-methane, 2-hydroxy-4-methoxybenzophenone, octyldimethyl-p-aminobenzoic acid, digalloyltriolate, 2,2-dihydroxy-4-methoxybenzophenone, ethyl-4-
20 (bis(hydroxypropyl)) aminobenzoate, 2-ethylhexyl-2-cyano-3,3-diphenylacrylate, 2-ethylhexylsalicylate, glyceryl-p-aminobenzoate, 3,3,5-trimethylcyclohexylsalicylate, methylanthranilate, p-dimethyl-aminobenzoic acid or aminobenzoate, 2-ethylhexyl-p-dimethyl-amino-benzoate, 2-
25 phenylbenzimidazole-5-sulfonic acid, and 2-(p-dimethylaminophenyl)-5-sulfonicbenzoxazoic acid, and mixtures of these compounds are preferred.

More preferred sunscreens useful in the compositions useful
30 in the subject invention are 2-ethylhexyl-p-methoxycinnamate, butylmethoxydibenzoylmethane, 2-hydroxy-4-

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methoxybenzophenone, octyldimethyl-p-aminobenzoic acid and mixtures thereof.

Also particularly useful in the compositions are sunscreens
5 such as those disclosed in U.S. Pat. No. 4,937,370 issued to Sabatelli on Jun. 26, 1990, and U.S. Pat. No. 4,999,186 issued to Sabatelli & Spirnak on Mar. 12, 1991, both of which are incorporated herein by reference. The sunscreen agents disclosed therein have, in a single molecule, two
10 distinct chromophore moieties which exhibit different ultra-violet radiation absorption spectra. One of the chromophore moieties absorbs predominantly in the UVB radiation range and the other absorbs strongly in the UVA radiation range.

15 A safe and effective amount of sunscreen may be used in the compositions useful in the subject invention. The composition preferably comprises from about 0.1% to about 10%, more preferably from about 0.1% to about 5%, of a sunscreen agent.

20 Useful inorganic sun-screens include, for example, zinc oxide iron oxide, silica, such as fumed silica, and titanium dioxide.

25 Ultrafine titanium dioxide in either of its two forms, namely water-dispersible titanium dioxide and oil-dispersible titanium dioxide, are especially suitable for use according to the invention. Water-dispersible titanium dioxide is ultra-fine titanium dioxide, the particles of
30 which are non-coated or which are coated with a material to

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impart a hydrophilic surface property to the particles. Examples of such materials include aluminium oxide and aluminium silicate.

5 Oil-dispersible titanium dioxide is ultrafine titanium dioxide, the particles of which exhibit a hydrophobic surface property, and which, for this purpose, can be coated with metal soaps such as aluminium stearate, aluminium laurate or zinc stearate, or with organosilicone compounds.

10

By "ultrafine titanium dioxide" is meant particles of titanium dioxide having an average particle size of less than 100 nm, preferably 70 nm or less, more preferably from 10 to 40 nm and most preferably from 15 to 25 nm.

15

By topical application to the skin of a mixture of both water-dispersible ultra-fine titanium dioxide and oil-dispersible ultrafine titanium dioxide, synergistically enhanced protection of the skin against the harmful effects
20 of both UV-A and UV-B rays is achievable.

The total amount of sun screen that is preferably incorporated in the composition according to the invention is from 0.1 to 5% by weight of the composition.

25

The composition according to the invention also preferably comprises a cosmetically acceptable vehicle to act as a diluant, dispersant or carrier for other materials present in the composition, so as to facilitate their distribution
30 when the composition is applied to the skin.

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Vehicles other than water can include liquid or solid emollients, solvents, humectants, thickeners and powders. Examples of each of these types of vehicle, which can be
5 used singly or as mixtures of one or more vehicles, are as follows:

Emollients, such as stearyl alcohol, glyceryl monoricinoleate, mink oil, cetyl alcohol, isopropyl
10 isostearate, stearic acid, isobutyl palmitate, isocetyl stearate, oleyl alcohol, isopropyl laurate, hexyl laurate, decyl oleate, octadecan-2-ol, isocetyl alcohol, eicosanyl alcohol, behenyl alcohol, cetyl palmitate, silicone oils such as dimethylpolysiloxane, di-n-butyl sebacate, isopropyl
15 myristate, isopropyl palmitate, isopropyl stearate, butyl stearate, polyethylene glycol, triethylene glycol, lanolin, cocoa butter, corn oil, cotton seed oil, olive oil, palm kernel oil, rapeseed oil, safflower seed oil, evening primrose oil, soybean oil, sunflower seed oil, avocado oil,
20 sesame seed oil, coconut oil, arachis oil, castor oil, acetylated lanolin alcohols, petroleum jelly, mineral oil, butyl myristate, isostearic acid, palmitic acid, isopropyl linoleate, lauryl lactate, myristyl lactate, decyl oleate, myristyl myristate;

25

Propellants, such as propane, butane, isobutane, dimethyl ether, carbon dioxide, nitrous oxide;

Solvents, such as ethyl alcohol, isopropanol, acetone,
30 ethylene glycol monoethyl ether, diethylene glycol monobutyl ether, diethylene glycol monoethyl ether;

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Powders, such as chalk, talc, fullers earth, kaolin, starch, gums, colloidal silica sodium polyacrylate, tetra alkyl and/or trialkyl aryl ammonium smectites, chemically modified
5 magnesium aluminium silicate, organically modified montmorillonite clay, hydrated aluminium silicate, fumed silica, carboxyvinyl polymer, sodium carboxymethyl cellulose, ethylene glycol monostearate.

10 The cosmetically acceptable vehicle will usually form from 10 to 99.9%, preferably from 50 to 99% by weight of the emulsion, and can, in the absence of other cosmetic adjuncts, form the balance of the composition.

15 Other optional skin lightening actives known in the art can also be employed in the invention. Non-limiting examples of skin lightening actives useful herein include adapalene, aloe extract, ammonium lactate, anethole derivatives, apple extract, arbutin, azelaic acid, bamboo extract, bearberry
20 extract, bletilla tuber, bupleurum falcatum extract, burnet extract, butyl hydroxy anisole, butyl hydroxy toluene, citrate esters, Chuanxiong, Dang-Gui, deoxyarbutin, 1,3 diphenyl propane derivatives, 2, 5 dihydroxybenzoic acid and its derivatives, 2-(4-acetoxyphenyl)-1,3 dithane, 2-(4-
25 hydroxyphenyl)-1,3 dithane, ellagic acid, escinol, estragole derivatives, FADEOUT (available from Pentapharm), Fangfeng, fennel extract, ganoderma extract, gaoben, GATULINE WHITENING (available from Gattlefosse), genistic acid and its derivatives, glabridin and its derivatives, gluco
30 pyranosyl-1-ascorbate, gluconic acid, glycolic acid, green tea extract, 4-Hydroxy-5-methyl-3[2H]-furanone,

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hydroquinone, 4 hydroxyanisole and its derivatives, 4-
hydroxy benzoic acid derivatives, hydroxycaprylic acid,
inositol ascorbate, kojic acid, lactic acid, lemon extract,
linoleic acid, magnesium ascorbyl phosphate, MELAWHITE
5 (available from Pentapharm), morus alba extract, mulberry
root extract, 5-octanoyl salicylic acid, parsley extract,
phellinus linteus extract, pyrogallol derivatives, 2,4
resorcinol derivatives, 3,5 resorcinol derivatives, rose
fruit extract, salicylic acid, Song-Yi extract, 3,4,5
10 trihydroxybenzyl derivatives, tranexamic acid and mixtures
thereof.

It is also possible to provide for the skin lightening
15 composition of the invention is the form of a personal wash
formulation, for example in the form of a soap bar,
additionally including for example soap and fatty matter.

The term total fatty matter, usually abbreviated to TFM is
20 used to denote the percentage by weight of fatty acid and
triglyceride residues present, without taking into account
the accompanying cations.

For soap having 18 carbon atoms, an accompanying sodium
25 cation will generally amount to about 8% by weight. Other
cations may be employed as desired for example zinc,
potassium, magnesium, alkyl ammonium and aluminium.

The term soap denotes salts of carboxylic fatty acids. The
30 soap may be derived from any of the triglycerides
conventionally used in soap manufacture - consequently the

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carboxylate anions in the soap may contain from 8 to 22 carbon atoms.

The soap may be obtained by saponifying a fat and/or a fatty
5 acid. The fats or oils generally used in soap manufacture may be such as tallow, tallow stearines, palm oil, palm stearines, soya bean oil, fish oil, castor oil, rice bran oil, sunflower oil, coconut oil, babassu oil, palm kernel oil, and others. In the above process the fatty acids are
10 derived from oils/fats selected from coconut, rice bran, groundnut, tallow, palm, palm kernel, cotton seed, soya bean, castor etc. The fatty acid soaps can also be synthetically prepared (e.g. by the oxidation of petroleum or by the hydrogenation of carbon monoxide by the Fischer-
15 Tropsch process). Resin acids, such as those present in tall oil, may be used. Naphthenic acids are also suitable.

Tallow fatty acids can be derived from various animal sources and generally comprise about 1-8% myristic acid,
20 about 21-32% palmitic acid, about 14-31% stearic acid, about 0-4% palmitoleic acid, about 36-50% oleic acid and about 0-5% linoleic acid. A typical distribution is 2.5% myristic acid, 29% palmitic acid, 23% stearic acid, 2% palmitoleic acid, 41.5% oleic acid, and 3% linoleic acid. Other similar
25 mixtures, such as those from palm oil and those derived from various animal tallow and lard are also included.

Coconut oil refers to fatty acid mixtures having an approximate carbon chain length distribution of 8% C₈, 7%
30 C₁₀, 48% C₁₂, 17% C₁₄, 8% C₁₆, 2% C₁₈, 7% oleic and 2%

- 15 -

linoleic acids (the first six fatty acids listed being saturated). Other sources having similar carbon chain length distributions, such as palm kernel oil and babassu kernel oil, are included within the term coconut oil.

5

Other detergent actives like synthetic anionic surfactants, cationic surfactants, amphoteric surfactants, zwitterionic surfactants or their mixtures thereof may also be present in the composition. Such actives are disclosed in standard
10 detergent textbooks for example "Surface Active Agents", Volume I by Schwartz and Perry and "Surface Active Agents and Detergents", Volume II by Schwartz, Perry and Berch.

The compositions of the present invention can comprise a
15 wide range of other optional cosmetic components. The CTFA Cosmetic Ingredient Handbook, Second Edition, 1992, which is incorporated by reference herein in its entirety, describes a wide variety of non-limiting cosmetic and pharmaceutical ingredients commonly used in the skin care industry, which
20 are suitable for use in the compositions of the present invention. Examples include: antioxidants, binders, biological additives, buffering agents, colorants, thickeners, polymers, astringents, fragrance, humectants, opacifying agents, pH adjusters, preservatives, natural
25 extracts, essential oils, skin sensates, skin soothing agents, and skin healing agents.

The invention is now further described by way of the following non-limiting examples.

30

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EXAMPLESi. Effect of different concentrations of Vitamin B12 on melanin content.

5

Experiments were carried out with B16 melanoma cells (commonly used for studying pigmentation), wherein the cells were treated with vitamin B12 (B12) at various concentrations (0.1, 0.5, 1, 2 and 5mM). The equivalent amounts as % by weight are indicated in parentheses below. The cells were then stained with silver nitrate by Fontana Masson method for visualisation of melanin. The cells treated with B12 were lighter than untreated controls, and a dose related decrease in colour was seen (Figure 1).

10

15

In Figure 1, the legends refer to different treatments of B12 at various concentrations.

A - Control (No B12 was added)

B - B12 0.1mM (0.013%)

20

C - B12 1mM (0.13%)

D - B12 2mM (0.25%)

E - B12 5mM (0.65%)

ii. Effect of B12 on skin lightening.

25

Each of the forearms (area from wrist to elbow) 8 - 10 sites were identified for treatment. The distribution of products over the various sites was randomized. The initial skin colour reading on each site served as the untreated control.

30

The details of the skin composition are presented in Table 1.

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On the first day of the study (Day 1), subjects who qualified were marked to identify the test sites and evaluated clinically and read on the Minolta chromameter CM 2500D. Study personnel applied 3 mg of the products to the test sites five times daily for 10 days. On 11th day, the subjects will be clinically evaluated and skin measurements with the CM 2500D will be done.

Table 1

Components %wt.	EXAMPLE 1	EXAMPLE 2
Stearic acid	15.0	15.0
Cetyl alcohol	0.5	0.5
Dimethyl polysiloxane	1.2	1.2
Isopropyl palmitate	4.4	4.4
Glyceryl monostearate	1.0	1.0
Methyl/propyl paraben	0.15	0.15
perfume	0.2	0.2
Niacinamide	1	1
B12	-	0.5
water	To 100	to 100
Effect on skin lightening		
Visual Lightening score (more negative indicates better lightening effect)	- 0.14	- 0.22

10

The results of the experiment showed that 0.5% B12 along with niacinamide had significant effect in improving skin lightening which was superior to the conventional cosmetic cream containing niacinamide alone.

15

CLAIMS

1. A skin care cosmetic composition comprising:
 - 5 a. 0.05 % to 5 % by weight vitamin B12 or a derivative thereof;
 - b. 0.1 % to 10 % by weight of a skin lightening vitamin chosen from niacinamide, pyridoxine or precursors thereof;
 - 10 c. up to 10 % by weight sunscreen; and
 - d. 10 % to 99 % by weight of a cosmetically acceptable vehicle or 15 % to 85 % by weight detergent active.
2. A skin care cosmetic composition according to Claim 1
15 wherein vitamin B12 is 0.1 to 1 % by weight of the composition.
3. A skin care cosmetic composition according to Claim 1
or Claim 2 wherein the total amount of vitamins does
20 not exceed 10 % by weight of the composition.
4. A skin care cosmetic composition according to any
preceding claim wherein the sunscreen is 0.1 % to 10 %
by weight of the composition.
25
5. A skin care cosmetic composition according to any
preceding claim wherein the sunscreen is selected from
2-ethylhexyl-p-methoxycinnamate,
butylmethoxydibenzoylmethane, 2-hydroxy-4-
30 methoxybenzophenone, octyl-p-aminobenzoic acid and
mixtures thereof.

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6. A skin care cosmetic composition according to any preceding claim wherein the sunscreen is 0.1 % to 5 % by weight of the composition.
- 5 7. A skin care cosmetic composition according to any preceding claim wherein the sunscreen is selected from zinc oxide, iron oxide, silica, such as fumed silica, and titanium dioxide.
- 10 8. A skin care cosmetic composition according to any preceding claim wherein the cosmetically acceptable vehicle is 50 to 99% by weight of the composition.
9. A skin care cosmetic composition according to any preceding claim wherein the detergent active is soap.
- 15 10. A cosmetic method of lightening skin, comprising applying thereto a cosmetic composition comprising:
- 20 a. 0.05 % to 5 % by weight vitamin B12 or a derivative thereof;
- b. 0.1 % to 10 % by weight of a skin lightening vitamin chosen from niacinamide, pyridoxine or precursors thereof;
- 25 c. 0.1 % to 10 % by weight sunscreen; and
- d. 10 % to 99 % by weight of a cosmetically acceptable vehicle or 15 % to 85 % by weight detergent active.

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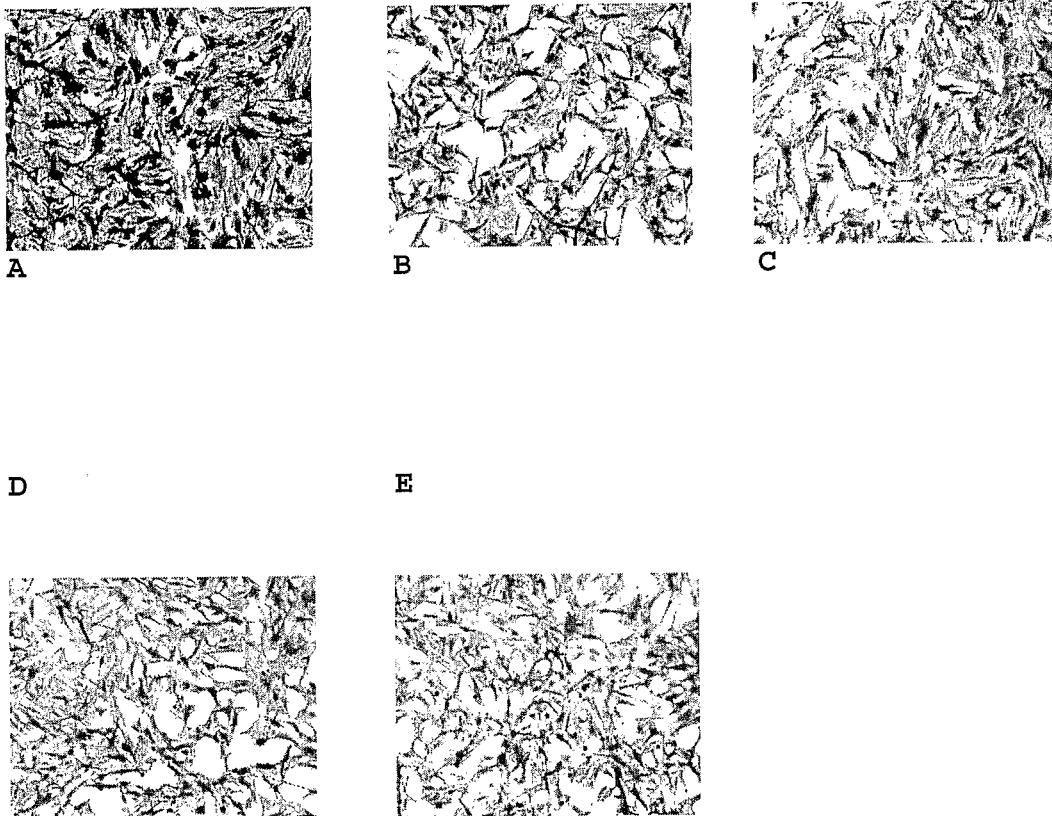


Figure 1: B16 cells stained with ammoniacal silver nitrate (Fontana Masson method) with and without treatment with various concentrations of vitamin B12

INTERNATIONAL SEARCH REPORT

Interr Application No

PCT/EP 03/11795

A. CLASSIFICATION OF SUBJECT MATTER IPC 7 A61K7/48		
According to International Patent Classification (IPC) or to both national classification and IPC		
B. FIELDS SEARCHED		
Minimum documentation searched (classification system followed by classification symbols) IPC 7 A61K		
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched		
Electronic data base consulted during the international search (name of data base and, where practical, search terms used) EPO-Internal, WPI Data, PAJ, CHEM ABS Data		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 02 03942 A (BARCLAY BARRY J ; PLANET BIOTECH INC (CA)) 17 January 2002 (2002-01-17) claims 1-15, 43-73 page 9, line 31	1-6, 8, 10
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X	DE 44 01 274 A (ROOYAN BEHDASHT CO) 20 July 1995 (1995-07-20) claims 1-10	1-3
X	US 5 554 647 A (PERRICONE NICHOLAS V) 10 September 1996 (1996-09-10) claim 15	1
	-/--	
<input checked="" type="checkbox"/>	Further documents are listed in the continuation of box C.	<input checked="" type="checkbox"/>
		Patent family members are listed in annex.
° Special categories of cited documents :		
<p>*A* document defining the general state of the art which is not considered to be of particular relevance</p> <p>*E* earlier document but published on or after the international filing date</p> <p>*L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)</p> <p>*O* document referring to an oral disclosure, use, exhibition or other means</p> <p>*P* document published prior to the international filing date but later than the priority date claimed</p>		<p>*T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention</p> <p>*X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone</p> <p>*Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.</p> <p>*Z* document member of the same patent family</p>
Date of the actual completion of the international search 3 March 2004		Date of mailing of the international search report 10/03/2004
Name and mailing address of the ISA European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016		Authorized officer Paloniemi Legland, R

INTERNATIONAL SEARCH REPORT

Interr Application No
PCT/EP 03/11795

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
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A	EP 0 998 914 A (JOHNSON & JOHNSON CONSUMER) 10 May 2000 (2000-05-10) claim 6	1-10
A	PATENT ABSTRACTS OF JAPAN vol. 1998, no. 05, 30 April 1998 (1998-04-30) & JP 10 007541 A (NOEVIR CO LTD), 13 January 1998 (1998-01-13) abstract	

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