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Baby skin is more sensitive and delicate than adult skin and should only be exposed to formulations which are mild and non-irritating but still provide the cleansing effect. Two patents that describe very mild cleansing compositions have been selected. The third patent describes the use of zeaxanthin to promote a suntan to provide sun protection. (Abstractors note: Caution recommended).

Title: Isotropic, flowable, skin pH aqueous cleansing compositions comprising N-acyl glycinate as primary surfactants

US Patent: 9,526,684

Appl. No. 14/832,322

Date Granted: December 27, 2016

Assignee: Galaxy Surfactant, Ltd.

Baby skin is very delicate and the skin barrier function is not developed fully so mildness, no tear, no dryness and a pH of around 5.0-5.8 is required. The patent describes aqueous isotropic cleansing composition that are flowable at pH<7 that utilise N-acyl glycinate as primary surfactants.

Amino acid-based surfactants were developed in response to the need for surfactants that along with cleansing, they should also provide other desired benefiting attributes such as mildness and skin and hair sensory to cleansing formulations. N-acyl glycinate salts are one of the fundamental amino acid-based surfactants. They are derived from natural coco fatty acid and glycine, which is one of the most abundant amino acids present in the structural proteins of human skin and hair, which makes them compatible with skin and hair proteins.

N-acyl glycinate protect the skin barrier function, which rapidly decreases due to loss in Natural Moisturizing Factor (NMF) during cleansing. N-acyl glycinate enhance and protect the intercellular lipids and thus smooths the skin and hair. Moreover, glycine being the smallest of the naturally occurring amino acids; the charged head group on N-acyl glycinate is significantly smaller than many other surfactants and this small size facilitates production of smaller surfactant micelles and the generation of a creamy lather during use.

Isotropic means clear and transparent, which are difficult attributes to obtain with formulations based on N-acyl glycinate in combination with O-acyl isethionates, however it is possible if an amphoteric surfactant such as lauramidopropyl betaine or cocamidopropyl betaine is added and the compositions remain clear and flowable at skin pH.

Title: Tear free baby cleanser

US Patent: 9,511,007

Appl. No. 14/390,050

Date Granted: December 6, 2016

Assignee: BASF SE

The applicants wished to provide a "tear-free" concentrate with less than 45% water, which is clear and of low viscosity that could be added to manufactures formulations. The patent describes a

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combination of alkyl polyglucosides and polyglyceryl fatty acid esters that when combined, yield a cleansing concentrate that can be diluted to form a shampoo or skin wash that is tear-free determined by standard ophthalmologic testing

The composition contains polyglycerine partial esters selected from the group consisting of polyglyceryl-4 caprylate/caprato, polyglyceryl-10 caprylate/caprato and polyglyceryl-4 caprate. Polyglyceryl-10 caprylate/caprato is particularly preferred and the "concentrate" wt. % is most preferably about 12 - 18%. An emollient ester such as glyceryl oleate is also a preferred additive at 0.25 – 2% and a preferred alkyl polyglucoside is decyl glucoside or lauryl glucoside, present at about 28-42%.and the concentrate may also contain a preservative and pH adjusting compound.

About 18 to 20% of concentrate is added to approximately 78 to 80 wt. % water to make a baby wash or shampoo formulation.

Title: Protection against sunburn and skin problems with topical and orally-ingested dosages of zeaxanthin

US Patent: 9,192,587

Appl. No. 14/259,020

Date Granted: November 24, 2015

Assignee: ZeaVision, LLC

Studies have shown that children who suffer more than just one or two serious sunburns, while they are still young and growing, tend to suffer from higher rates of cancer, decades later. According to the applicants a carotenoid substance called zeaxanthin, when ingested orally at suitable dosages can provide effective protection against sunburns. Zeaxanthin can also help sunburned and reddened skin be gradually converted into skin that appears to be completely healthy and tanned, rather than flaking or peeling.

Effective dosages for toddlers and children should be roughly proportional to their body weight, so accordingly, dosages of about 5 mg/day or higher are likely to provide noticeable skin tinting in toddlers and children who weigh about 10 to 25 kilograms. Zeaxanthin can also be added to any type of topical composition that is designed to be spread across a skin surface to create or enhance a tanned appearance.

The applicants suggest that creating a tan and for protecting the skin against UV damage involves a two-step process: ingesting zeaxanthin at the recommended dosage and then exposing at least one area of skin to ultraviolet radiation at a level which induces melanin production within the exposed area of skin. These two steps, if taken in combination, will create a combination of elevated zeaxanthin concentration due to oral ingestion, and elevated melanin concentration due to natural skin responses to UV light. The combination, of both elevated zeaxanthin and elevated melanin concentration in the skin or near-surface layers of the skin is claimed to provide a naturally suntanned tint and highly effective protection against subsequent sunburns.

Title: Composition containing amino acid surfactants, betaines and N-methyl-N-acylglucamines and having improved foam quality and higher viscosity

US Patent: 9,452,121

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Appl. No. 14/401,337

Date Granted: September 27, 2016

Assignee: Clariant International Ltd.

Amino acid surfactants such as acyl glycinates, aspartates and glutamates are well tolerated by skin but are difficult to thicken. It was found that longer-chained N-acyl-N-methylglucamines have a high thickening capacity for compositions comprising amino acid surfactants and are suitable as co-surfactants. The patent relates to a composition that contains at least one N-acyl-amino acid surfactant, a betaine surfactant, C16/18 N-methyl-N-acylglucamine, a solvent and optionally one or more additives use as a shampoo, face cleaner, liquid cleaner or shower gel.

The amino acid surfactant comprises from 5% to 15% of the composition and is selected from the group consisting of acyl glycinate, acyl aspartate, acyl glutamate, acyl sarcosinate and mixtures thereof. Preference is given for cocoyl glycinates, lauroyl glycinates, cocoyl glutamates, cocoyl aspartates and sodium lauroyl sarcosinate.

Preferred betaine surfactants are amidopropyl betaines such as cocoamidopropyl betaine, present at about 5% by weight. The preferred solvent is water, propylene glycol or a mixture of these. The additives are those commonly found in personal care compositions to enhance their aesthetics and stability and consumer appeal. Examples are preservatives, fragrances, botanical extracts, dyes and cationic polymers. The applicants claim that preparations made within the scope of the patent have a viscosity comparable to those made with alkyl sulphates and alkyl ether sulphates.

Title: Analgesic cleansing composition

US Patent: 9,364,402

Appl. No. 14/587,950

Date Granted: June 14, 2016

Assignee: The Dial Corporation

Hand sanitizer compositions have antibacterial properties and cleanse the hands without the need for direct contact with water. Topical analgesic compositions provide relief from muscle and ligament soreness and existing ones are applied as leave-on creams or gels to provide extended contact. The patent describes analgesic cleansing compositions, which may be either wash-off or leave-on and may optionally include antibacterial agents and a cosmetically suitable carrier.

The patent names many possible analgesics both natural and synthetic, but methyl salicylate is the one preferred. It names virtually every class of surfactant without showing any preference and example compositions of wash-off compositions show 4-10% anionic surfactant content in combination with non-ionic and zwitterionic surfactants, a deposition aid and up to 10% methyl lactate. Leave-on compositions have a maximum 1.5% anionic surfactant, 0.5% to 10% methyl lactate and a deposition aid.

Examples of deposition aids are cationic polymers and polyquaternium-7, polyquaternium-10 and polyquaternium-11 are named. Leave-on cleansing compositions are provided in an aqueous-alcoholic carrier containing at least 50% ethanol or isopropanol. Both types of cleansing composition may also contain a polymeric thickening aid, an antibacterial agent, fragrance, humectants, an

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exfoliant, a conditioning agent, plant extracts and other additives to enhance product aesthetics, shelf life and consumer appeal.

Title: SPF liquid cleansing compositions and methods of use

US Patent: 9,351,913

Appl. No. 14/530,787

Date Granted: May 31, 2016

Assignee: Cockerell Dermatology Development, Ltd

The patent describes a facial or body wash composition that, after rinsing, provides a sun protection factor of at least 6. The preferred surfactant system is a propriety composition of ammonium laureth sulphate in combination decyl glucoside, available as Plantaron PS-100 by Cognis. Additional surfactants are sodium laureth sulphate, steareth-21 and sodium lauroyl sarcosine.

The applicants claim that red petrolatum is an essential element of the composition and additionally, the composition contains an organic sunscreen such as octocrylene and micronised zinc oxide titanium dioxide, surface treated to render them hydrophobic. Other essential ingredients are an alkyl silicone, a volatile cyclic silicone such as cyclopentasiloxane and melanin or a melanin precursor. Optionally it may also contain iron oxide pigments. The metal oxides and pigments block ultraviolet radiation in the wavelength range of from about 290 nm to about 400 nm.

Deposition of the sunscreen is assisted by the inclusion of sodium acrylate in capric triglyceride, available as Luvigel EM from BASF, and hydroxyethyl cellulose for viscosity control. The composition may also include preservatives, perfume etc. and is preferably supplied in aerosol format.

An illustrative formula is given for a Body Wash with SPF8 after rinsing.

Part A (Surfactant Phase)	% w/w	Range
Sodium Laureth Sulfate (27% active)	11.40	10.0-15.0
Steareth-21	6.50	5.0-8.0
Decyl Glucoside and Ammonium Laureth Sulfate	8.30	5.0-10.0
Sodium Lauroyl sarcosine	3.00	1.0-5.0
Caprylic Triglycerides and Sodium Acrylates	5.90	4.0-8.0
Melanin	2.00	1.5-3.0
Hydroxyethyl Cellulose	0.75	0.50-1.25
Deionized water qs to 100		
Part B (Sunscreens)		
Titanium dioxide (Micronized)	1.61	1.0-5.0
Zinc oxide (Micronized)	7.90	5.0 – 10.0
Octocrylene	4.08	2.0-7.0
Red Petrolatum	7.90	4.0-10.0
Alkyl methicone and C30-45 olefin	1.00	0.5-3.0
Cyclopentasiloxane	4.37	2.0-7.0
Part C		
Preservative, Fragrance	qs	

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After mixing the composition serves as a concentrate and is combined with propellant at a ratio of 96% concentrate to 4% propellant in an aerosol container. Upon application to the skin, the product is a shiny, flowable, tinted product which, within seconds, increases in volume and appears as a mousse. After cleansing and rinsing according to standard test protocols an in-vivo test showed UVB protection of SPF7.9.

Three body care patents: a foaming cleanser, a cleansing scrub and exfoliator and a depilatory composition.

Title: Foamable composition combining a polar solvent and a hydrophobic carrier

US Patent: 9,622,947

Appl. No. 12/350,854

Date Granted: April 18, 2017

Assignee: Foamix Pharmaceuticals Ltd

The patent describes a foamable cosmetic composition delivered from a pressurised container to form a breakable foam that is stable at skin temperature and breaks upon application of shear force. The composition comprises at least one hydrophobic organic carrier, at least one polar solvent; at least one surface-active agent plus water and at least one liquefied or compressed gas propellant.

The hydrophobic carrier comprises isopropyl myristate plus a silicone oil selected from the group consisting of dimethicone, cyclomethicone and any mixtures thereof. In addition, it may contain other esters, silicones or oils but caprylic/capric triglyceride is preferred and peppermint oil, spearmint oil, or mixtures thereof are included. The polar solvent represents between 15% and 60% by weight of the total composition and is a mixture of ethanol and glycerin and may contain additional polyols such as propylene glycol and an alpha hydroxy acid, preferably citric acid.

The preferred surface-active agent is a polyoxyethylene alkyl ether combined with a sucrose ester and the composition further comprises ingredients to improve the aesthetics and stability of the product, including hydroxypropyl methylcellulose, xanthan gum and stearic acid.

The preferred propellant is a fluorocarbon at about 3% to about 25% (w/w) of the composition. The patent is very long with much obfuscation and those interested are strongly advised to read the full document.

Title: Exfoliating composition based on cream of tartar and bicarbonate

US Patent: 9,457,203

Appl. No. 13/122,943

Date Granted: October 4, 2016

Assignee: Cosmetic Warriors Limited

Cream of tartar is potassium hydrogen tartrate and the patent describes a solid exfoliating composition comprising from about 1% to about 10% of a surfactant, about 9% to about 18% sodium

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bicarbonate, from about 4.5% to about 9% cream of tartar and a granular exfoliant in an amount of from about 50% to about 85% by weight of the total composition. In addition, it may contain essential oils, vitamins, fragrances, colourings, decorative articles and mixtures thereof.

The principal claim is that the incorporation of the surfactant onto the user's skin results in the production of a desirable lather or foam when the solid exfoliating composition is massaged against the moist skin of a user. Thus, the composition provides cleansing and exfoliation. The preferred surfactant is a mixture of sodium laureth sulfate, cocamide diethanolamine and lauryl betaine. The granular exfoliant is selected from the group consisting of cosmetically acceptable sugar, salt, sand, clay, seeds, ground shell, pumice and mixtures thereof.

A simplified formula was given as sodium bicarbonate 12.0% sodium laureth sulfate 6.5% cream of tartar 6.0% fragrance 0.5% sugar 75%. The sodium bicarbonate, sodium laureth sulfate and cream of tartar were mixed together, followed by addition of the sugar and the fragrance. The mixture was then pressed into a mould and allowed to solidify to the solid exfoliating composition. The composition was then massaged against the moist surface of the user's skin, which resulted in an exfoliating action and, along with the foaming action of the surfactant, removed dead skin and dirt from the skin.

Title: Depilatory composition

US Patent: 9,573,001

Appl. No. 13/132,585

Date Granted: February 21, 2017

Assignee: Reckitt & Colman (Overseas) Limited

Typically, the active agent in depilatory creams is based on a sulphur-containing compound such as potassium thioglycolate, which results in the production of volatile sulphurous compounds that have an unpleasant odour. The patent describes a depilatory cream composition comprising a depilatory active and about 0.05% of one or more volatile, essential oils. It is claimed that the presence of the essential oils reduces the production of volatile sulphur-containing compounds.

The composition further comprises talc as a skin-enhancing agent, glycerine as a humectant and up to 20% potassium thioglycolate as the depilatory active. Mineral oil to a maximum 10% is present as an emollient and C30-C45 alkyl methicone silicone wax and nylon-12 polyamide resin may be included. These play a key role in providing the depilatory cream composition with its desired soft and velvety skin-feel characteristics.

The composition includes about 55% to 60% water; one or more surfactants such as cetearyl phosphate, cetearyl alcohol, cetearyl glucoside and cetearth 20, and calcium hydroxide together with potassium hydroxide to provide a pH of from 9 to 12.5. Optionally, the composition includes an accelerator that will accelerate the hair removal reaction and urea is preferred at about from 6% to 10%. The composition may comprise other optional ingredients, such as sodium magnesium silicate, which, is particularly advantageous since it provides sodium and magnesium ions for the buffer system and improves the efficiency of depilation.

Three patents that address the problems of wash-off and of ensuring long lasting fragrance delivery.

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Title: Cosmetic composition with watertight fragrance

US Patent: 9,265,711

Appl. No. 13/796,659

Date Granted: February 23, 2016

Assignee: COTY B.V.

The patent describes a cosmetic composition with a fragrance that is resistant to wash-off by sweat and water. The composition comprises fragrance and a fragrance-fixing complex consisting of 0.01-10% by weight of a hydrophobic, alcohol-soluble, carboxylated acrylates/octylacrylamide copolymer and 0.01-10% by weight of a hydrolysed jojoba ester.

The water-resistant fragrance-fixing complex is formed prior to addition of the fragrance by spraying the acrylates/octylacrylamide copolymer in powder form into a mixture consisting of the hydrolysed jojoba ester and an alcohol or an alcohol/water mixture at a temperature of 18° to 25°C and then dried. The copolymer is present in the complex in the range of 0.1 to 1%, the jojoba ester is about 0.1 to 1% and one or more fragrances are present in an amount ranging between 0.1 and 16% by weight. It is added to the final composition at about 0.5 to 1.5% by weight.

The carboxylated acrylates/octylacrylamide copolymer is soluble in ethanol, isopropanol and fatty alcohols and can be made water-soluble or dispersible by neutralising the carboxy groups with water-soluble bases such as triethanolamine. Through the interaction of the copolymer with the hydrolysed jojoba ester, the fragrance molecules are integrated into a complex and remain bonded to the skin for a very long time. At the same time, the complex has a strong water-repellent effect making the fragrance resistant to wash-off by rain, sweat, or swimming.

Title: Long-lasting fragrance delivery system

US Patent: 8,871,705

Appl. No. 13/362,705

Date Granted: October 28, 2014

Assignee: Kimberly-Clark Worldwide Inc.

The patent describes a fragrance delivery system comprising an emulsion of a silicone-based polyurethane, a fragrance, and a carrier. The silicone-based polyurethane used in the delivery system includes a polymeric backbone having at least one lipophilic moiety and at least one hydrophilic moiety and one particularly suitable hydrophilic moiety is given as bis-PEG-15 dimethicone. The preferred lipophilic moiety is isophorone diisocyanate (IPDI) and they are combined to give bis-PEG-15 dimethicone/IPDI copolymer. In addition to the fragrance in the emulsion, the fragrance delivery system may optionally include additional fragrance that has been

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encapsulated. Accordingly, once the fragrance of the emulsion is used, the encapsulated fragrance can provide an even further extended release of fragrance.

The fragrance should be oil-based and the carrier is a polar material such as water or alcohol and the final composition may comprise any combination of cosmetic ingredients and compositions suitable for topical application. After application to human skin the carrier evaporates and the silicone-based polyurethane of the emulsion forms a film network in which the fragrance is entrapped. This provides a slow release and long-lasting fragrance as the entrapped fragrance is still able to diffuse from the film layer, but at a much slower rate, thus allowing for a long-lasting fragrance to be perceived by the user.

Title: Carrier system for fragrances

US Patent: 9,422,505

Appl. No. 14/010,693

Date Granted: August 23, 2016

Assignee: Givaudan S.A.

The patent relates to a carrier system for fragrances entailing a microcapsule comprising a core of hydrophobic material composed of at least one fragrance and a microcapsule shell. The shell consists essentially of the following monomers in copolymerized form: (a) from 20 to 60% by weight of methyl methacrylate, (b) from 20 to 60% by weight of 1,4-butanediol diacrylate, pentaerythrityl triacrylate, ethylene glycol dimethacrylate, pentaerythrityl tetraacrylate, or mixtures thereof., and (c) from 0 to 60% by weight of methacrylic acid.

The microcapsules are obtained by polymerizing the monomer or monomer mixture in an emulsion, which forms the shell in the oil phase of a stable oil-in-water emulsion. The process is defined as suspension polymerization. The hydrophobic material may be any non-polar cosmetic oil. As a general procedure, a mixture of water, protective colloid, oil phase and ionic emulsifiers are dispersed at a low shear rate with an anchor-type stirring blade. The shear rate lies in the preferred range of 200 rpm to 350 rpm. to yield a stable oil-in-water emulsion.

The hydrophobic material serves simultaneously as a solvent or dispersant for the monomer mixture. The polymerization takes place in the oil phase and while the monomers are essentially soluble in the oil, they form polymers which are insoluble in the oil phase and water phase but migrate to the interface between the oil droplets and the water phase. With further polymerization, they form the wall material which finally encloses the hydrophobic material as the core of the microcapsules. The microcapsule dispersions obtained can subsequently be spray dried and are said to be particularly suitable for hair shampoos and conditioners to which they are added at 0.1 to 5% by weight, based on the total weight of the composition.

Title: Nail polish compositions

US Patent: 9,427,392

Appl. No. 14/050,212

Date Granted: August 30, 2016

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Assignee: Xerox Corp.

The claims state that there exists a need for new film-forming agents to be used in aqueous nail polish compositions to reduce or replace the organic solvents and nitrocellulose used in conventional compositions. Described are aqueous-based nail polish compositions that are both safer and more **environmentally-friendly** that contain polyester resins such as sodio-sulfonated co-polyester-co-polysiloxane copolymers as base resin vehicles. In aqueous-based compositions, such film-forming agents should be quick setting and maintain good adhesion and glossiness and the nail polish composition is preferably free of formaldehyde, toluene and phthalate.

A method of preparing the resins is described in USP 5,348,832A and the preparation of an aqueous-based nail polish is described as emulsifying the sulfonated polyester in water and adding an optional pigment. The polyester resin may be between about 20% and 35% solids content and to this may be added 0.1% to 1% thickening agent, preferably hydroxyethylcellulose, laponite or an associative polyurethane. If coloured, then preferably between 0.5% and 2% of at least one organic or inorganic pigment is added. The spreadability is adjusted by adding between 0.05% and 0.2% of a water-soluble fluorinated surfactant and the composition may further contain wetting agents, dispersing agents, an anti-foaming agent, a sunscreen, a preservative, a drying-acceleration agent, a wax, a silicone, or mixtures thereof.

Title: Cosmetic pigments, their production method, and cosmetics containing the cosmetic pigments

US Patent: 9,181,436

Appl. No. 13/498,200

Date Granted: November 10, 2015

Assignee: Toyobo Co. Ltd.

Coating pigment surfaces with a silicone or fluorine compound is a means of improving the waterproofness and contributing to long-lasting makeup. However, there are some problems that they give a dried out and less moist feeling and skin adhesion becomes poor because they have less affinity to a biological body.

Because of the increasing popularity of natural products among consumers the development of cosmetics which are human-body friendly with good skin adhesion and which provide good skin-feel are strongly desired. Surfactants (biosurfactants) such as glucolipids are said to have great biodegradability and low toxicity and they are **environmentally-friendly**. However, existing biosurfactants have poor hydrophobicity, so they are not suitable for cosmetic pigments.

An objective of the applicants is to provide cosmetic pigments that are human-body friendly with good skin adhesion and this is achieved by coating pigment surfaces with glucolipids produced by

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yeasts from olive and soy oil. The lipid is mannosylerythritol comprising mannose, sugar alcohol and a fatty acid and pigments are coated with it by dissolving or dispersing mannosylerythritol lipid in an organic solvent, mixing the liquid with the pigments, then removing the organic solvent. The pigments are provided with water-resistant properties, good skin adhesion and, because of a moisturising effect deriving from the sugar, a fresh and enriched feeling is obtained when applied to skin. Furthermore, mannosylerythritol lipid has great biodegradability and low toxicity so is environmentally-friendly.

Title: Water-based gel cosmetic compositions without film formers

US Patent: 9,364,399

Appl. No. 14/221,674

Date Granted: June 14, 2016

Assignee: L'Oreal (Paris)

Water-based face and eyeliner compositions are desirable as they can be easier to remove, are less likely to clog pores, may afford a less shiny and more natural look and feel when compared to oil or solvent-based compositions. They are less expensive to process and offer a more **sustainable environmental platform**. Described are water-based cosmetic compositions comprising about 1% synthetic non-associative thickening polymer, about 0.5% synthetic associative thickening polymer, about 0.75% emulsifier, and about 11.5% liquid fatty substance that, together with 40 – 55% water, provide a gel. These %ages are by weight.

Synthetic non-associative polymers increase viscosity when dissolved in the continuous phase by occupying a large volume and immobilising the continuous phase in the polymer network. The preferred synthetic non-associative thickening polymer is ammonium polyacryloyldimethyl taurate. Synthetic associative thickening polymers are polymers capable of non-specific hydrophobic associations that are chiefly responsible for the increase in viscosity and the preferred synthetic associative thickening polymer is ammonium cryloyldimethyltaurate/steareth-8 methacrylate copolymer.

The preferred emulsifier is a gemini surfactant as part of a co-emulsifier system composed of behenyl alcohol, glyceryl stearate, disodium ethylene dicocamide peg-15 disulfate and glyceryl stearate citrate, commercially available as Ceralution H from Sassol. The liquid fatty substance is

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selected from dimethicone, phenyl trimethicone, glyceryl ethylhexanoate/stearate/adipate and isostearyl hydroxyl stearate, and mixtures thereof.

The composition may also contain waxes, pigments, preservatives, humectants and emollients. Preferred examples of waxes are alkyl or alkoxy dimethicones, synthetic beeswax and hydrocarbon waxes, present at about 5% by weight. A preferred emollient is butylene glycol at between 3% and 10% and pigments, preferably iron oxides, are present at about 20%. All % are by weight and typical of L'Oreal patents there is much obfuscation and many other combinations are given.

Three recently granted patents have been selected that in turn, apply to shampooing, conditioning and styling.

Title: Anhydrous foaming composition

US Patent: 9,579,271

Appl. No. 13/978,449

Date Granted: February 28, 2017

Assignee: L'OREAL (Paris, FR)

The applicants claim foaming hair cleansing compositions comprising compounds of natural origin that are pleasant to use, that mix readily with water, show rapid transformation into foam and rinse easily. It is also advantageous to provide foaming products in solid form not requiring the use of preservatives. The patent describes an anhydrous cosmetic composition comprising at least one non-ionic surfactant, at least one anionic surfactant and at least 25% of at least one filler. It is partially or completely soluble in water and provides a foaming product used for cleansing the skin and hair.

Many possible ingredients are listed but preferred non-ionic surfactants are hydrogenated lecithins and alkyl polyglucosides, particularly sucrose laurate. The preferred anionic surfactants are chosen from derivatives of proteins of vegetable origin, amino acids and amino acid derivatives and lactic acid derivatives or their salts. Particularly preferred is sodium lauroyl glutamate. Additional foaming agents include alkyl betaines, sultaines and saponins.

The composition includes particles as a filler that are insoluble in the composition, whatever its manufacturing temperature. At least one filler is chosen from talc, kaolin and rice grain husk powder. Cellulose fibres up to 1.6mm in length are added to help stabilise the composition, which may also contain a binding agent such as glycerine or propylene glycol or a mixture of both.

An example composition is given as propylene glycol 29.4%, glycerin 5%, sucrose laurate 7%, fragrance 0.1%, sodium lauroyl glutamate 5%, kaolin 10%, cellulose fibres 2.5%, rice grain husk powder 5%, titanium oxide 1%, talc 35%. The proportions of propylene glycol and talc may be adjusted to provide different consistencies.

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Title: Conditioning composition for hair

US Patent: 9,616,012

Appl. No. 13/814,110

Date Granted: April 11, 2017

Assignee: KAO Germany GmbH

The patent describes an aqueous hair conditioning composition comprising at least one cationic starch polymer and at least one additional cationic polymer selected from the ones with monosaccharide units. It can be in the form of a cleansing-conditioning composition, or in the form of a conditioner used after washing hair with cleansing compositions.

The preferred monosaccharide polymer is guar hydroxypropyl trimonium chloride to a maximum of 2.5% by weight. The preferred cationic starch polymer is hydroxypropyl oxidized starch PG trimonium chloride present to a maximum of 5% by weight, however, both polymers should be present in equal proportions, claim the applicants. Other constituents include at least one cationic surfactant, a silicone compound and a UV absorber. It may be in emulsion form containing a fatty alcohol such as cetearyl alcohol and, if supplied as a combined shampoo and conditioner, it may also contain an amphoteric and an anionic surfactant.

The preferred silicone is Bis-hydroxy/methoxy amodimethicone or trimonium chloride amodimethicone present at 0.1 to 3% by weight calculated to total composition. It should be noted that the compositions can comprise more than one additional silicone compound and the concentration ranges given here refer to the total concentration. Conditioning compositions may include moisturisers, chelating agents, preservatives and fragrance. The preferred pH range is 3.5 to 5 and the composition is claimed to provide shine, smoothness, looseness and bounce to hair and to be particularly suitable for adding volume to fine and damaged hair.

An example conditioner formula is given as cetearyl alcohol 5.0%, stearyl trimethylammonium chloride 2.0%, benzyl alcohol 2.5%, guar hydroxypropyl trimonium chloride 0.5%, hydroxypropyl oxidized starch PG 0.5%, trimonium chloride amodimethicone 0.9%, fragrance, preservative q.s. lactic acid q.s. pH 3.5 water. to 100.

Title: Hair styling composition

US Patent: 9,603,788

Appl. No. 14/546,346

Date Granted: March 28, 2017

Assignee: Milbon Co., Ltd. (Osaka, JP)

The patent describes a hair styling composition formulated to make hair styling easy and to add wet-look shine to hair. It comprises a thickener, a hair fixative polymer, a liquid oil, a wax particle dispersion and water. The wax particle dispersion is preferably of Euphorbia cerifera (candelilla) wax or of beeswax. It also contains at least one non-ionic surfactant, either polyoxyethylene cetyl ether or polyoxyethylene polyoxypropylene cetyl ether or a mixture of both.

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Of the many thickeners listed a salt of a carboxyvinyl polymer is particularly preferred because of its high thickening effect. An anionic, amphoteric, or non-ionic polymer or copolymer, or a urethane resin may be used as the hair fixative polymer. Of the many listed alkyl acrylate/diacetone acrylamide copolymer neutralised with AMP is particularly preferred. Liquid paraffin is the preferred oil and the candelilla wax or beeswax particles are dispersed in water as an emulsion that contains at least one non-ionic surfactant to stabilise it.

An example formula is shown as Tamarindus indica seed gum 0.1%, carboxyvinyl polymer 0.2%, alkyl acrylate/diacetone acrylamide copolymer AMP 1.0%, liquid paraffin 5.0% beeswax particle dispersion 5.0% stearic acid 3.0%, hydroxystearic acid 0.5%, POE (15) cetyl ether 3.0%, POE (5.5) cetyl ether 3.0%, beeswax 1.0%, 1,3-butylene glycol 5.0%, ethanol 1.0%, preservative q.s. perfume q.s., water to 100% by weight.

Title: Cosmetic or dermatological preparation for application on wet skin

US Patent: 9,610,231

Appl. No. 13/606,536

Date Granted: April 4, 2017

Assignee: Beiersdorf AG

Cosmetic products are either washed off after application or are intended to remain on the skin to increase their effectiveness. Men favour showers and prefer to minimise time spent applying cosmetic products. The patent describes an aqueous cosmetic or dermatological preparation for application on wet or moist skin, which exhibits a skin care effect and can be applied under the shower.

The composition is substantially free from conventional emulsifiers and comprises at least two different polyacrylic acid polymers, at least two different C₁₄₋₂₂ fatty alcohols, and at least 13% w/w of microcrystalline wax, preferably in combination with one or more hydrocarbon oils. However, at least one polyacrylic acid polymer may have emulsifying properties whereas another one will improve the sensory properties of the composition. The preferred polymers with emulsifying properties are acrylate crosspolymers [INCI: Acrylates/C10-30 alkyl acrylate crosspolymer] and for sensory properties carbomers are preferred.

The fatty alcohol component varies between 3% and 13% and is a mixture of myristyl, cetyl and stearyl alcohols. The microcrystalline wax represents up to 45% of the composition and it forms a partially occlusive protective film on the skin, which protects it against drying out. The preferred hydrocarbon oil is mineral oil [INCI: Paraffinum liquidum]. Other optional ingredients to improve aesthetics and stability or to make cosmetic claims may be added.

The applicants claim that the preparation may be applied to wet skin in the shower as a moisturising body lotion and it may also be applied to the wet face prior to shaving.

Title: Pre-shave preparation with enhanced lubricity

US Patent: 8,173,110

Appl. No. 12/954,388

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1st published in SPC

John Woodruff

Date Granted: May 8, 2012

Assignee: Combe Incorporated

The patent describes a composition to lubricate skin prior to using an electric razor. It comprises at least one polyfluoroalkyl dimethicone polymer in a volatile carrier and a suspending agent to suspend it in the volatile component. It is claimed that the composition dehydrates moisture on the skin or facial hair to reduce friction between the skin surface and razor and improve the feel of the skin.

About 5% perfluorononyl dimethicone, is included to impart lubricity and the most preferred volatile component is ethanol, comprising at least 70% by weight of the total composition. The most preferred suspending agents are acrylate copolymers and/or acrylate-alkyl copolymers and various possibilities are identified by INCI name, trade name and suppliers. Optionally suitable emollients are included and isodecyl neopentanoate, isodecyl myristate and triethylhexanoate are named and included at a total of 5%. Other optional ingredients include skin conditioners, humectants, colour, fragrance, antioxidants, chelators, natural extracts, vitamins, UV light absorbers, opacifying agents, solvents and combinations thereof. A simple formula is shown as Perfluorononyl dimethicone 2.0%; Deionized water 16.4%; Acrylate/C10-30/Alkyl Acrylate Crosspolymer 0.60%; Isodecyl Myristate 2.0%; Trimethylolpropane 1.0%; SD Alcohol 78.0% and this was used to demonstrate the effectiveness of the composition in reducing friction and improving closeness of shave.

Title: High lubrication shaving aid

US Patent: 9,561,164

Appl. No. 13/882,403

Date Granted: February 7, 2017

Assignee: Kulesza; John E

Shaving creams are designed to provide a soothing affect by adding moisture to the shaved area and lubricate the interface between the blades and the skin. Of the three types of shaving creams, lathering ones are the most common but have a relatively high pH that can produce skin irritation. Non-lathering shaving creams or gels are simple oil-water emulsions that provide lower pH due to the absence of metal hydroxides but do not define unshaved areas. Post-foaming gels produce foam during application to the skin and are typically simple aqueous dispersions and the foaming action is due to vaporisation of aliphatic hydrocarbons during application. The use of volatile hydrocarbons(VOCs) to promote foaming reduces the lubricity of the final product on the skin and VOCs are preferably avoided for environmental reasons.

The patent describes a shaving aid composition that includes an organic polyhalogenic agent to promote post application foaming and increase lubricity. Specifically, the shaving aid is said to provide improved lubrication and reduced irritation from shaving and does not rely on hydrocarbons

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for foaming. Therapeutics are optionally included to reduce sensitivity or treat skin conditions such as acne vulgaris and pseudofolliculitis barbae. The basic composition comprises about 15% triethanolamine stearate; about 7% methoxynonafluorobutane; about 0.75% polyethylene; about 0.5% lauroyl lysine and water. To this may be added vitamin A or its derivatives; hydroxy acids; benzoyl peroxide; antimicrobials; anti-viral agents; nonsteroidal anti-inflammatory agents; UV filters, lipids or immunomodulators. Further possible additives include preservatives, emulsifiers, foam boosters or enhancers, thickeners, solvents, skin conditioning agents, humectants, colour, fragrance and other ingredients to improve the stability, aesthetics and efficacy of the composition.

The patent is of interest because of the wealth of detail about possible therapeutic additives and their beneficial effects on skin.

Title: Long-wear mascara composition

US Patent: 9,636,294

Appl. No. 14/636,411

Date Granted: May 2, 2017

Assignee: L'Oréal Paris

The patent describes a mascara composition including between 15 – 25% olefin/acrylate grafted polymer and 5% - 10% of a styrene/acrylates copolymer. Mascara compositions are typically in the form of an emulsion including film-formers, water, surfactants and waxes to impart curl, volume, length, thickness and colour to eyelashes. However, they tend to smudge or flake during use and the applicants claim to provide a mascara composition which imparts an enhanced appearance to the eyelashes for an extended time without flaking or smudging.

The composition is not in emulsion form and preferably, does not contain any wax. The preferred olefin/acrylate polymer is Syntran EX80 from Interpolymer comprising about 62% water, 33% olefin/acrylate grafted polymer, about 1% sodium laureth sulfate and about 1% C12-15 -Pareth 15, present at 65 – 70% by weight, relative to the total weight of the mascara composition. The most preferred styrene/acrylates copolymer is Joncryl 77 from BASF included at a ratio of 4:1, olefin/acrylate grafted polymer to styrene/acrylates copolymer. Pigments may be included to colour the eyelashes or the composition may be used as a clear water-proof base coat or top coat or be applied to the eye lashes to enhance volume and thickness.

Title: Lip balm composition

US Patent: 8,722,106

Appl. No. 13/309,736

Date Granted: May 13, 2014

Assignee: The MotherVine Nutraceuticals Co. LLC

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The patent describes a lip balm composition of natural ingredients, comprising 54-66% olive oil, 22-28% beeswax, 3-5% pomace, 3-4% propolis, 1.6-2.4% honey, 1.6-2.4% apricot oil, 1.6-2.4% vitamin E acetate, 0.5-1.5% lavender oil, 0.3-0.7% rosemary oil, 0.3-0.7% neem oil, and 0.02-0.08% vitamin E. Other optional ingredients include natural scents, flavourings, colouring, UV protectors and vitamins, whereby all ingredients add to 100% by weight.

Pomace is the solid remains of grapes, olives, apples or other fruits after pressing for the juice or oil. It contains the skins, the pulp, the seeds, etc. Preferred is muscadine grape pomace that contains comparatively high amount of resveratrol, which is found in the skin of red grapes and is said to have beneficial health factors.

The olive oil, beeswax, pomace, propolis, honey, apricot oil, vitamin E acetate and vitamin E are blended together forming a uniform mixture, when all these components are in a liquid state the three more volatile components of lavender oil, rosemary oil and neem oil may be blended together and added and the total blend is then introduced into a typical lip balm container and cooled until it solidifies.

Title: Nail polish remover composition and its use

US Patent: 9,399,005

Appl. No. 14/006,363

Date Granted: July 26, 2016

Assignee: OY Faintend Ltd (Finland)

The patent describes a water based nail polish remover composition comprising an anionic surfactant, a water-soluble solvent, and water. According to the applicants, conventional nail polish removers contain organic solvents, such as acetone, alkyl acetate, acetonitrile or ethyl acetate that have undesired properties including volatility and flammability, and they may be highly toxic and malodorous. It is the objective of this patent to provide a water-based nail polish remover composition free of organic solvents.

The preferred anionic surfactant is the triethanolamine salt of C14-C17-alkane sulfonate and the preferred water-soluble salt is butoxydiglycol although many other glycolic ones are named. A co-solvent may also be included and of the various alcohols named 1-methoxy-2-propanol is the most preferred. The patent gives % ranges for constituents but they are very wide. For example, in one preferred claim the water-soluble solvent is present from 80 to 95% w/w, water from 5 to 20% w/w and surfactants from 0.05 to 5% w/w. A preferred alternative claims the water-soluble solvent is present from 5 to 15% w/w, alcohol co-solvent from 60 to 70% w/w, water from 15 to 30% w/w, and surfactant in an amount from 0.05 to 10% w/w.

Illustrative formulations are as follows: -

Nail Polish Composition 1

Ingredient	%w/w
1-methoxy-2-propanol	63.00
Water	20.00
Butoxydiglycol	15.00

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C.14-C. 17-alkane sulfonate TEA salt	1.00
TEA sulfate	0.50
PEG-5 cocamide	0.50

Nail Polish Composition 2

Ingredient	%w/w
Butoxydiglycol	88.00
Water	10.00
C14-C17-alkane sulfonate TEA salt	1.00
TEA sulfate	0.50
PEG-5 cocamide	0.50

Title: Oral care composition

US Patent: 9,554,986

Appl. No. 14/447,385

Date Granted: January 31, 2017

Inventors: Harvey; Nelson (Amarillo, TX)

The patent describes an oral care composition comprising one or more functional agents selected from a group consisting of a whitening agent, a re-mineralising agent, an anti-plaque agent, an anti-gingivitis agent, a detoxifying agent and combinations thereof. The composition further comprises a probiotic blend of beneficial oral bacteria and at least one essential oil with antimicrobial activity.

The applicants claim that the use of oral probiotics is a healthy method for reducing infective oral bacterial population along with reduction in tooth decay and gum disease. The probiotic blend described in the patent comprises a mixture of beneficial oral bacteria selected from *L. rueteri*, *L. fermentum*, *L. rhamnosus*, *S. thermophilus*, *S. salivarius* and combinations thereof.

The detoxifying agent is Norwegian kelp (*Ascophyllum nodosum*) claimed to provide a wide array of nutrients including polysaccharides, amino acids, proteins, organic acid, vitamins and minerals. The essential oil is selected from a group consisting of clove oil, cinnamon oil, oregano oil, peppermint oil, sesame oil and combinations thereof. The essential oil mixture shows antimicrobial activity against harmful pathogens such as *Streptococcus mutans*.

Bromelain and papain enzymes are included to digest plaque and act against gingivitis. The composition may also contain calcium lactate, which prevents tooth decay and strengthens teeth; zinc citrate, which acts against plaque formation and xylitol as a sweetening agent with antimicrobial properties. Possible remineralising agents are sodium bicarbonate, Norwegian kelp, bentonite clay, calcium lactate and zinc citrate.

Title: Oral care compositions for topical application

US Patent: 9,554,984

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Appl. No. 10/754,430

Date Granted: January 31, 2017

Assignee: Jaleva Pharmaceuticals, LLC

A limitation of many commonly used oral care products is their brief period of efficacy when applied to oral tissues. The patent describes a biological dressing for oral care comprising a gum resin, a volatile solvent and an oral care agent. When the solvent evaporates the gum resin will dry to form a solid coating that sticks at the site of application so that the oral care agent is in contact for a sustained period.

The preferred gum resin is either benzoin or mastic gum (*Pistacia lentiscus*) representing about 10 – 30% of the composition and the preferred volatile solvent is ethanol at 60 – 70%. There are many possible oral care agents listed but preferred are non-steroidal anti-inflammatory agents such as ibuprofen, naproxen, aspirin and meclofenamic acid.

The composition is painted onto the site of application, the solvent evaporates and the oral care agent is slowly released from the adhesive film so formed.

Title: Oral care composition with cross-linked polymer peroxide

US Patent: 9,517,194

Appl. No. 14/723,139

Date Granted: December 13, 2016

Assignee: Colgate-Palmolive Co

The patent describes a tooth whitening system comprising a peroxide complexed with cross-linked polyvinyl pyrrolidone (PVP) in polyethylene glycol, preferably PEG-600. The preferred peroxide is hydrogen peroxide and by complexing with PVP the chemical and physical characteristics provide controlled release of the peroxide compound. Commercially available complexes of peroxide adsorbed to cross-linked polyvinylpyrrolidone are named as Peroxydone XL-10 and Peroxydone K-30, marketed by ISP Co. In addition liquid hydrogen peroxide may also be included.

The peroxide complex is delivered via a suitable non-aqueous carrier, which optionally includes an adhesion agent to enhance the retention of the peroxide complex on the oral cavity surface. Such adhesion agents include film forming materials, viscosity enhancers and organic polymers, silicone gums and silicas. A peroxide activator may be included such as sodium bicarbonate, sodium carbonate and manganese gluconate. The activator is relatively nonactive with the peroxide whitening agent in non-aqueous liquid compositions but reacts with the peroxide to release oxygen when the composition applied to the teeth is contacted with saliva in the oral cavity.

The composition may be in the form of a toothpaste, in which case it will contain an abrasive or polishing agent. Suitable abrasives include silica, alumina, insoluble phosphates, calcium carbonate and resinous abrasives such as urea-formaldehyde condensation products. Suitable insoluble phosphates are dicalcium orthophosphate dihydrate, calcium pyrophosphate, tricalcium phosphate and insoluble sodium polymetaphosphate. One or more abrasives typically represent from about 15% to about 30% by weight of the composition.

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The composition may also include a stannous ion source as a periodontal active, tartar control agent, anti-caries agent and tooth desensitiser. A fluoride ion source as an anti-caries agent and a flavouring and an antioxidant. Orally acceptable antioxidants include BHA, BHT, vitamin A, carotenoids, vitamin E, flavonoids, polyphenols, ascorbic acid, herbal antioxidants, chlorophyll, melatonin, and mixtures thereof. Many other possible additives are listed but a simple illustrative formula is given as follows: -

Ingredients	Weight %
Hydrogen peroxide/PVP complex	25.35
Hydrogen Peroxide aqueous solution	4.00
Silicone Fluid - 350 CST	19.65
Silicone Adhesive 8-7016	30,00
PEG-600	20.10
Sodium Saccharin	0.30
Mint Flavouring	0.60

Title: Topical macqui berry formulation

US Patent: 9,463,153

Appl. No. 14/480,182

Date Granted: October 11, 2016

Assignee: Trade Martyn Int.

Photoaging is a process in which the skin changes in appearance because of repeated exposure to sunlight. Antioxidants are useful agents for treating skin damage and the patent describes a topical formulation that comprises a macqui berry extract containing anthocyanins having a very high oxygen radical absorbance capacity (ORAC) in a stabilised form.

Anthocyanins encompass a class of flavonoid compounds that are naturally occurring, water-soluble compounds particularly useful for their topical antioxidative properties. Additionally, anthocyanins are collagenase inhibitors, which helps in the prevention and reduction of wrinkles, however, there are problems associated with antioxidants as they are readily oxidized and lose their anti-oxidant capacity.

Macqui berry (*Aristotelia chilensis*) comes from a berry plant indigenous to Chile and Argentina. The whole fruit, its juice or an extract may be used in liquid or solid form. The anthocyanin content in the macqui berry juice has a total anthocyanin content of 203 mg anthocyanin per 100 ml juice and an ORAC value of 206. This ORAC value means it is relatively unstable over time, especially when exposed to light or air, and it needs to be stabilised. Suitable stabilising agents include glucuronide, glucuronide and microencapsulation. A particularly useful flavonoid glucuronide is rosmarinic acid from rosemary and a preferred stabilising system is rosmarinic acid with diethylhexyl syringylidene malonate. The macqui berry formulation may also be stabilised by microencapsulation using nanosomes or liposomes or by coacervation techniques or interfacial polymerization.

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There are many aspects to this very descriptive and lengthy patent and those interested are urged to obtain the complete publication.

Title: Use of cellular extracts for skin rejuvenation

US Patent: 9,486,401

Appl. No. 14/578,923

Date Granted: November 8, 2016

Assignee: Regenics AS

The patent describes methods and agents for restoring aged or damaged skin to a healthy appearance using biologically active salmon eggs extract. Unfertilised salmon eggs are treated to reduce bacterial load then homogenised and centrifuged to provide an active fraction comprising about 100 to 380 mg/ml protein in an aqueous solution.

The patent describes compositions that contain salmon egg extract in combination with every other possible cosmetic ingredient or class of ingredients, summarised as surfactants, oils and fats, polyhydric alcohols, lower alcohols, thickening agents, UV absorbents, light scattering agents, preservatives, antioxidants, antibiotics, chelating agents, pH regulators, flavouring agents, pigments and water. All forms of pharmaceutical and cosmetic compositions are also claimed, including ointments, creams and gels.

The compositions described are of particular interest for wound healing and the treatment of scars but according to the applicants it can also be used to regulate hair growth by stimulating or modulating hair follicle cells by topical or sub-dermal applications. The extremely detailed patent discloses the results of treating various skin and hair conditions with the extract including how it reverses age induced loss of collagen by stimulating collagen secretion and increases the proliferation of fibroblasts and decreases the appearance of fine lines in vivo. It also gives a significant reduction of the melanin index in skin and reduces skin redness and increases skin hydration and skin sebum levels.

Title: Biphasic cosmetic

US Patent: 9,498,430

Appl. No. 15/227,621

Date Granted: November 22, 2016

Assignee: Restorsea, LLC

The patent describes a bi-phasic, non-emulsion cosmetic composition for application to skin that includes both a hydrophobic and a hydrophilic liquid phase together in one container. Either or both phases may include active ingredients useful for cosmetic applications and when the composition is agitated, a temporary mixture of the two phases results, wherein the mixture contains globules of one phase suspended in the other.

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The hydrophobic phase comprises a vegetable oil or caprylic/capric triglyceride or a silicone oil, mineral oil or a hydrogenated terpene or any combination thereof. It may also contain an oil-soluble active agent and plant extracts are preferred. The hydrophilic phase is water plus water-soluble active ingredients such as a protein, algae or plant extracts. A preferred protein is a water-soluble protein from fish eggs. It may also contain insoluble particulate matter comprising mica, gold flakes, metalized plastic flakes, fluorophlogopite, titanium dioxide, tin oxide or iron oxide or any combination of these held in suspension by sclerotium gum. When the container is agitated droplets of one phase are suspended in the other and both phases may be topically applied to skin.

An illustrative formula shows an algae extract dissolved in caprylic/capric triglyceride as the hydrophobic phase. The hydrophilic phase is an aqueous solution of sclerotium gum plus Lactobacillus fermentation filtrate, Crocus sativus flower extract and inorganic glitter. The hydrophilic phase is pH adjusted to pH 6.5 to 7.3, buffered with polyepsilon-lysine buffer solution and salmon hatching fluid filtrate containing zonase, lectin and choriolysin proteins is then added to complete the hydrophilic phase.

Title: Method, composition for the preparation and cleaning of photo chromic dyes resulting in a product suitable for use on human skin

US Patent: 9,550,897

Appl. No. 15/209,404

Date Granted: January 24, 2017

Assignee: Genesis Laboratories, Inc.

The patent describes a photo chromic dye suitable for direct application to human skin, and configured to indicate exposure to UV rays by a change in colour. The composition can be applied prior to application of a sunscreen or formulated with the sunscreen such, that when the protective factor of the sunscreen diminishes, the photo chromic dye will change colour to generate a visual indicator of this condition.

The patent does not identify the photochromic dyes other than they are in general use for T-shirts and other novelty items. Because they were not intended for application to human skin they are not free from impurities, however the applicants claim a method that will remove such impurities so rendering them suitable for cosmetic use.

The method involves precipitating the dye at the point of manufacture then washing it in a tank of methanol, which removes toxins and carcinogens that are harmful to human skin. It is recrystallized and again washed in methanol to ensure complete removal before being dried and then washed in a tank of heptane, recrystallized and washed again in heptane. It is claimed that that this double washing and recrystallizing process ensures complete removal of impurities, toxins and carcinogens and provides a material suitable for application to human skin.

Title: Cosmetic composition containing inorganic powder

US Patent: 9,480,632

Appl. No. 14/454,690

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John Woodruff

Date Granted: November 1, 2016 Assignee:

According to the applicants UVA (320-400 nm) and UVB (280-320 nm) may adversely affect skin so many studies have been conducted to develop organic or inorganic filters for blocking UVA and UVB. However, Infra-red (IR) occupies 80% of sunlight and recent studies have revealed that IR is harmful to skin and stimulates wrinkle formation. Therefore, there is a need for a composition for blocking out light over a wide range of wavelengths to screen skin from UV and near-IR simultaneously. The patent describes a cosmetic composition to achieve this comprising boron nitride and one or more kinds of inorganic powders selected from the group consisting of cerium oxide, titanium oxide, talc, aluminium oxide, iron oxide, zinc oxide and mica.

Boron nitride having an average particle size of 4-6 μm (microns) present in an amount of 5-30 wt %, is effective at blocking IR. The ideal particle sizes and preferred levels for the UV screens are as follows:

Material	Optimum size	Preferred %
Titanium dioxide	10 – 30 μm	5 – 25%
Cerium oxide	5 – 15 μm	3 – 30%
Zinc oxide	0.3 – 1.5 μm	1 – 15%
Talc	8 – 15 μm	3 – 10%
Mica	7 – 25 μm	2 – 8%
Aluminium oxide	5 – 10 μm	2 - 8%
Iron oxide	0.2 – 7 μm	0.001 – 2 %

Samples of sunscreen products were made with 5% boron nitride and 5% inorganic UV absorber and tested using an SPF Optometrics Analyzer. It was found that boron nitride with titanium oxide, cerium oxide or talc show the highest SPF index and boron nitride with zinc oxide shows the highest PFA index. Near-IR has a wavelength of 770-1400 nm and the blocking out of near-IR was determined using a Fourier Transform Near-Infrared Spectrometer MB 100. It was found that boron nitride with titanium oxide, cerium oxide or talc showed the highest effect of blocking out near-IR.

Title: Photostable sunscreen composition

US Patent: 9,295,625

Appl. No. 14/419,284

Date Granted: March 29, 2016

Assignee: Conopco, Inc

The patent relates to a photostable sunscreen composition that provides enhanced sun protection over a sustained period of time. Claimed is a composition comprising 0.01 to 10% by weight of UVA or UVB sunscreens selected from the group consisting of benzophenones, anthranilates, dibenzoylmethane, salicylates, cinnamates, camphores, p-amino benzoic acid (PABA) compounds and their mixtures. The preferred composition comprises from 0.1 – 5% dibenzoylmethane, otherwise known as Avobenzone in the USA and butyl methoxydibenzoylmethane in Europe, plus up

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to 7% of an oil soluble UV-B organic sunscreen and preferred is ethylhexyl methoxycinnamate. In total the organic sunscreen content should not exceed 10% by weight.

The base cream contained 17% hysteric acid (a mixture of stearic and palmitic acids) and 0.6% potassium hydroxide to create a vanishing cream type composition. A fatty acid content of 6- 20% by weight is an essential part of the system and to make it unique for patent purposes it also claims an ester and a solubiliser. The SPF was tested in-vitro and sunscreen photostability was tested by exposing a thin film of sunscreen compositions to 60 minutes of simulated exposure. 1% phenethyl benzoate was shown to improve the photostability of the composition while the inclusion of 2% POE-23 lauryl ether improved the SPF value.

Title: Compositions and methods for the removal of tattoos

US Patent: 9,801,799

Appl. No. 14/914,929

Date Granted: October 31, 2017

Assignee: Dalhousia University

Professional tattoos are created by injecting tattoo inks with a rapidly reciprocating needle that drives ink particles into the dermis to a depth of 0.6 mm to 2.2 mm where they become enclosed within phagocytic cells. Removal is difficult and is generally by laser, dermabrasion and surgical treatments. If desired, tattooed eyebrows, eyeliner and lip liner are also difficult to remove.

The patent describes a method for fading or removing a tattoo by administering a composition comprising an effective amount of a bisphosphonate and at least one pharmaceutically acceptable excipient. The bisphosphonate is clodronate or a pharmaceutically acceptable salt or ester thereof combined with hydrogenated soy phosphatidylcholine in liposome form. The composition also contains 5 – 15% ethanol and sorbitan monooleate plus other pharmaceutically acceptable ingredients to improve product application and shelf life. The composition may be administered as a solution by injection, as a transdermal patch or as an emulsion by topical application.

After topical application to the tattoo the liposomal formulation was found to penetrate the skin into the deeper dermis, where it was able to colocalise with areas of tattoo ink. It is believed by the applicants that the administration of the bisphosphonate compositions reduce or fade the visible tattoo by depleting and destroying phagocytic cells that have phagocytosed tattoo ink, The destruction of these residual phagocytic cells in the perivascular areas of the dermis results in the tattoo ink pigment and particles being transported to the lymphatic nodes for disposal, resulting in the fading of the tattoo in the area treated. Multiple doses over an extended period may be necessary to completely remove the tattoo.

Title: Vitamin C composition for use in the prevention and treatment of stretch marks, radiation dermatitis, and other skin conditions and methods of using the same

US Patent: 9,585,830

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John Woodruff

Appl. No. 13/738,125

Date Granted: March 7, 2017

Inventor: Kaplan; David L

The same properties that make vitamin C an excellent antioxidant render it difficult to create stable vitamin C formulations because it rapidly oxidizes upon exposure to air and in the presence of water, light, and high temperatures. The patent describes a stable composition comprising ascorbic acid in solution with a hygroscopic compound that may be used for the prevention, inhibition and treatment of striae gravidarum, radiation dermatitis, rhytids, lentigos, dyschromia, sun-damage induced hyperpigmentation, cellulite, scars and purpura.

The hygroscopic solvent is selected from the group consisting of glycerin, sucrose, sorbitol, dextrose, and corn syrup, which is heated in an enclosed container fitted with an agitator to between 40 and 55C before adding the ascorbic acid to form a solution. The preferred hygroscopic compound is glycerin,

Additional ingredients are mentioned: dimethicone or cyclomethicone are added to increase the aesthetic pleasure of the formulation. Panthenol and propylene glycol are added for their moisturising properties; pantothenic acid (vitamin B5) is included as an essential nutrient required to sustain life and ethanol is included because of its ability to increase the stability and absorption of the solution. Tocopherol and its derivatives are included for their antioxidant properties and are commonly used as components to stabilise formulations that have high potential for oxidative degradation. One composition comprises 5-20% ascorbic acid; 95-85% hygroscopic compound; 0-3% silicone-based organic polymer; 0-5% pantothenic acid; 0-5% tocopherol; 0-30% propylene glycol and 0-20% ethanol.

The patent explains in detail how the compositions have a beneficial effect on various skin disorders including stretch marks and radiation dermatitis.

Title: Cosmetic compositions and uses thereof

US Patent: 9,463,155

Appl. No. 14/204,553

Date Granted: October 11, 2016

Assignee: Mary Kay Inc.

Cellulite is fatty tissue deposits in the subcutaneous tissue layers deep under the skin, which manifests in an undesirable dimpled or bumpy appearance or texture. The patent describes a composition to reduce the appearance of cellulite and improve skin texture comprising a combination of Rubus fruticosus extract, Argania spinosa kernel oil, Coleus barbatus extract, glycolic acid, and a mixture of caffeine, escin, and algae extract. The patented composition may be included in various cosmetically acceptable formulations suitable for topical application as exemplified in the following composition

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Ingredients	Minimum %w/w	Maximum %w/w
Aqua	65.0	75.0
Alcohol denat.	5.0	10.0
Glycerin	2.0	5.0
Sorbitol	2.0	4.0
Cyclopentasiloxane	1.0	3.0
Dimethicone	0.2	2.0
Caffeine	0.5	2.0
Pentaerythrityl tetraisostearate	0.5	2.0
Caprylic/capric triglyceride	0.5	2.0
Pentylene glycol	0.5	2.0
Ethoxydiglycol	0.5	2.0
Ammonium acryloyldimethyltaurate NP copolymer	0.5	2.0
Triethanolamine	0.5	2.0
Argania spinosa kernel oil	0.5	2.0
Jojoba esters	0.5	2.0
Glycolic acid	0.1	1.0
Phenoxyethanol	0.1	1.0
Cetyl alcohol	0.1	1.0
Dipropylene glycol	0.1	1.0
Maltodextrin	0.1	1.0
Caprylyl glycol	0.1	1.0
Cetearyl alcohol	0.1	1.0
Acrylates/C10-30 alkyl acrylate crosspolymer	0.1	1.0
Xanthan gum	0.1	1.0
Menthyl lactate	0.1	1.0
Fragrance	0.1	1.0
Rubus fruticosus (Blackberry) leaf extract	0.01	1.0
Coleus barbatus root extract	0.01	1.0
Escin	0.001	1.0
Ascophyllum nodosum extract	0.001	1.0

Title: Depilatory compositions

US Patent: 9,974,735

Appl. No. 15/498,070

Date Granted: May 22, 2018

Assignee: Reckitt & Colman (Overseas) Ltd.

Typically, depilatory creams are heated to about 50C before being applied to the skin, where they are left for a period of about 15 minutes to dissolve body hair before being removed. Such creams rapidly lose heat after application, which degrades their efficacy. The patent describes a depilatory composition comprising a depilatory active and a combination of materials that enables the composition to retain heat for better hair removal. The depilatory active is a compound capable of

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degrading keratin and preferred is 10% to 15% potassium thioglycolate, which may be produced by mixing thioglycolic acid with potassium hydroxide to give pH 9 -12.5 in the final composition.

The combination of materials that alter the thermal properties of the depilatory consists of a mixture of saturated hydrocarbons, fatty acids, fatty alcohols, and esters and hydrated inorganic salts thereof. Silica aerogels and fumed silica and mica, clay, bentonite, and kaolin may also be included. This combination of components enables the depilatory composition to have an improved cooling profile and is present at a level of 9.5-10%.

A combination appearing in the claims comprises talc, water, magnesium trisilicate, sodium gluconate, calcium hydroxide, sorbitol 70%, glycerin, TiO₂, propylene glycol, mineral oil, cetearyl alcohol, cetareth 20, lotus flower milk extract, acrylates copolymer, urea, lithium magnesium sodium silicate, potassium thioglycolate solution, a copolymer of vinylpyrrolidone and hexadecane, and potassium hydroxide solution.

The final composition may also include a skin-feel enhancing agent such as 1 - 2% C30-C45 alkyl methicone while talc at 1 - 2% and Nylon-12 at 1- 3% confer a powdery after-feel. Emollients play an important role in providing the depilatory cream composition with its desired skin-feel characteristics and include mineral oil at 0.5 - 5 %; silicone oil at 1 - 4% and emollient esters at 1 - 3%. The silicone oil is a mixture of dimethicone; cyclopentasiloxane and dimethiconol. Urea is added to accelerate the depilatory action and glycerin, fragrance and chelating materials improve product aesthetics and stability.

Note: Throughout these abstracts % are by weight relative to the total weights of the compositions.

Title: Nanostructured conditioning cosmetic composition, the use thereof in cosmetic preparations, and a conditioning shampoo

US Patent: 9,918,913

Appl. No. 15/033,357

Date Granted: March 20, 2018

Assignee: Natura Cosmetics S.A

Described is a conditioning cosmetic composition comprising a cationic surfactant encapsulated in a nanostructured system of a mixture of lipids and waxes in water, stabilised by surfactants or emulsifiers, and reduced to submicrometric sizes by a high-pressure homogenisation process.

The cationic surfactant is either cetyltrimethylammonium chloride or behentrimonium chloride and lipids are either sweet-almond oil or palm oil with Karite butter or carnauba wax plus an emollient and film-forming agent. The conditioning composition may include a non-ionic surfactant selected from the group consisting of lauryl glycoside, decyl glycoside and sorbitan stearate. Optional additives include a silicone conditioning aid and antioxidants, preservatives, thickeners, pH adjusters, sequestering agents, fragrances cleansing agents and other cosmetically acceptable components.

The conditioning shampoo comprises water, an anionic surfactant such as sodium laureth sulfate with cocamidopropyl betaine and guar hydroxypropyltrimonium chloride and acrylate/alkyl acrylate C10-30 as a thickener. The nanostructured conditioning composition is added to the shampoo and

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the nanoparticles help in stabilising it since they prevent the positive charge of the cationic surfactant from interacting with the negative charge of the anionic surfactant system.

Title: Temperature responsive delivery systems

US Patent: 8,349,363

Appl. No. 12/266,782

Date Granted: January 8, 2013

Assignee: Kimberly-Clark Worldwide, Inc

The patent describes a temperature responsive delivery system comprising a polymer, a cationic bio-adhesive, a salt and an active agent. The delivery system is useful in delivering moisturisers or pharmaceutically active agents within the user's body cavities in a controlled release manner.

The applicants claim that moisturisers are used for the treatment of dryness and the symptoms related to it in areas such as the vaginal cavity. Current technologies include the use of a hydrophobic barrier such as petrolatum, mineral oil or lanolin to cover the affected tissue. Another method deploys a humectant like glycerol or propylene glycol or uses synthetic or natural polymers like polyacrylic acid and hyaluronic acid. The hydrophobic barrier approach is not effective for re-moisturising and humectant systems tend to be readily removed from the body. Synthetic or natural polymers have proven somewhat effective but are not easy to use nor do they provide complete tissue coverage. The applicants claim to have identified a need for an effective delivery system that will perform well and may be extended to deliver other treatment agents. To achieve this, they have developed a new temperature responsive delivery system.

Temperature responsive or "thermogellation" polymer solutions respond to temperature changes by changing from a liquid to a gel. The temperature range of interest is about 35C and polymers that change state at about this temperature are useful because they will remain within a body cavity while a liquid would not. The patent describes various block polymers that are incorporated in the patent, but ethylene oxide/propylene oxide block copolymers are preferred.

Most cell and tissue surfaces are negatively charged, so positively charged bio-adhesives will adhere well to mucosa membranes. Of the many materials mentioned polyquaterniums -4, -6 and -10 appear to be preferred. The salt may be sodium or potassium chloride and suitable moisturisers include vitamin E, aloe, stearic acid, cetyl alcohol, glyceryl stearate SE polysorbate 20 and alpha-hydroxy acid. The bio-adhesive polymer represents about 10% and the thermogelling polymer from 15-25% of the total composition. The salt is about 1 – 1.5% and the balance is water and any medicaments or moisturisers.

Title: Gelled composite

US Patent: 9,028,872

Appl. No. 11/712,612

Date Granted: May 12, 2015

Assignee: FMC Corporation

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The patent describes composites comprising a polysaccharide gelled within pores of a foam that is useful for controlled release delivery systems in personal care applications. They may be used for entrapping heat-sensitive components, such as cells, drugs, flavours or fragrances within the polysaccharide gel and are able to gently immobilise fragile components without exposing such components to shear forces.

The composite comprises a gel formed in situ and dispersed within the foam. The foam is preferably a polysaccharide and chitosan and hyaluronates are preferred. It may be strengthened by including hydroxypropyl methyl cellulose and the foam is a solid structure suitable for forming patches or sheet masks. The composite includes a polysaccharide gel formed in situ within the pores of the foam prepared by adding it in solution to a foam that has gel-forming ions incorporated within it. The preferred polysaccharide gel is an alginate added as an aqueous solution and gelled with divalent calcium ions within the foam. Added in this way ions form links between the foam and the soluble polysaccharide.

The liquid containing the polysaccharide may further include a functional component entrapped in the polysaccharide gel. Any functional component may be added provided it does not prevent the liquid component from being absorbed into the foam or the polysaccharide from forming a gel. The functional component may be a liquid or a solid and, if insoluble, is dispersed as fine particles in the liquid. Desirable components to be dispersed in the gel include flavours, fragrances, enzymes, plant cells, and yeasts. Depending upon the formulation properties, the composite can be formulated to degrade over various periods of time and thereby release immobilised materials such as therapeutic agents or tissue-regenerative agents.

Title: Multi component moisture triggered controlled release system that imparts long lasting cooling sensation on the target site and/or provides high impact fragrance or flavour burst

US Patent: 7,067,152

Appl. No. 10/211,727

Date Granted: June 27, 2006

Assignee: Salvona LLC

The patent describes a controlled release system that imparts a long-lasting cooling sensation and provides high odour or flavour intensity in response to moisture. The delivery system is substantially a free-flowing powder formed of solid hydrophobic nano-spheres that are encapsulated in moisture sensitive micro-spheres and many possible variations and applications are included in the patent.

The solid nano-spheres consist of a hydrophobic material and a first active agent selected from the group consisting of fragrance or flavour and a cosmetic, dermatological or pharmaceutical agent. The nano-spheres are encapsulated in micro-spheres comprising a moisture sensitive matrix material and a second active agent. The second active agent is one or more cooling agents with a fragrance or flavour and a cosmetic, dermatological or pharmaceutical agent. Upon contact with moisture from the skin or lips the moisture sensitive micro-sphere dissolves to release the second active agent to provide a burst of flavour or fragrance. The nano-spheres then release the first active agent continuously for an extended time and any additional cosmetic, dermatological, and pharmaceutical active agents added to the controlled release system.

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The preferred cooling agent is selected from the group consisting of menthyl lactate, menthone glycerinacetal and menthyl ethoxyacetate. The preferred hydrophobic material is polyvinyl alcohol in combination with a polysaccharide. The preferred moisture sensitive material is polyvinyl pyrrolidine or water-soluble cellulose, polyvinyl alcohol and water dispersible synthetic polymers and copolymers. Also listed are starch derivatives, polysaccharides, hydrocolloids, natural gums, proteins, and mixtures thereof.

Patents that show novel uses for emulsifiers and surfactants are described.

Title: Stabilized, sprayable emulsion containing active agent particles

US Patent: 9,700,510

Appl. No. 15/173,849

Date Granted: July 11, 2017

Assignee: Mission Pharmacal Company

The patent describes an emulsion that includes a hydrofluoro-based propellant and active agent particles. The applicants found that by selectively controlling the type of propellant used, the nature of the emulsification system and the viscosity of the emulsion, a substantially homogeneous distribution of the active agent particles was maintained that could be evenly sprayed onto a surface without running once applied.

The emulsification system comprises a non-crosslinked dimethicone polyol, preferably polyglyceryl-4 isostearate/cetyl dimethicone copolyol/hexyl laurate mixture; a sorbitan fatty acid ester, preferably sorbitan oleate; octyldodecanol and a non-ionic hydrophilic emulsifier comprising a sorbitan fatty acid ester modified with a polyoxyethylene, preferably polysorbate-80. Many other water-in-oil emulsifier systems are named as suitable provided the propellant is homogeneously distributed and the emulsion, active agent particles and propellant each have similar specific gravities.

It is also necessary to use a viscosity modifier and of the many named Simulgel NS from Seppic comprising a hydroxyethyl acrylate/sodium acryloyl dimethyl taurate copolymer with squalane and polysorbate 60 is preferred.

A preferred active agent in particle form is zinc oxide. Additional ingredients to improve aesthetic and stability may be added including fragrance, preservatives, freezing point depressants, thymol iodide, magnesium sulphate and various emollients, silanes, siloxanes and skin conditioning agents.

There is one illustrative formula given as follows:

Sprayable Emulsion

Ingredient	%w/w	Example trade name
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Tetrafluoropropenes	22.00	HFO-1234ze
Zinc oxide particles	8.11	Zano 10 Plus ex Umicore
Cetyl PEG/PPG-10/1 dimethicone	0.98	Abil EM90 ex Evonik
Bis-PEG/PPG-14/14 dimethicone (and) dimethicone	0.98	Abil 97S ex Evonik
Sorbitan oleate	0.43	
Polysorbate 80	0.35	
Octyldodecanol/octyldodecyl xyloside/PEG-30	3.12	Eaynov ex Seppic
Aluminum starch octenylsuccinate	2.34	Dry-flo PC ex AkzoNobel
Hydroxyethyl acrylate/sodium acryloyldimethyl taurate copolymer, squalane, polysorbate 60	0.78	Simulgel NS
Silicone Oil	15.60	
Water	29.74	
Conditioning agents	1.95	
Fragrance	0.16	
Freezing point depressant	3.12	e.g. glycol
Preservatives	0.20	
Emollients	10.14	e.g. Caprylic/capric triglyceride
Total	100.00	

Title: Skin care composition

US Patent: 9,750,681

Appl. No. 12/450,596

Date Granted: September 5, 2017

Assignee: JG Skin, Inc.

Skin that is exposed to environmental factors, such as sunlight, wind, low humidity and household and industrial chemicals can become dry in texture and appearance. Desiccated skin tends to look weathered, develops unwanted surface lines and small wrinkles, and loses smoothness and softness. When colorant compositions are applied on skin that is not sufficiently moisturised, the desired finished effect may not be visually uniform or pleasing. The applicants claim that there is an ongoing need for skin-care compositions that help ameliorate and mitigate such adverse environmental effects

Skin care oil-in-water emulsions are disclosed comprising phospholipid-stabilised, submicron triglyceride particles. a polycarboxylate polymer and a phosphate ester-type emulsifier. The triglyceride particles have a unimolecular shell of phospholipid with a phosphatidylcholine stabiliser to encapsulate an oil core comprising caprylic/capric triglyceride and auxiliary lipophilic skin conditioning agents, water, and water-soluble solvents selected from the group consisting of alcohol, liquid polyol and a combination thereof. The preferred polycarboxylate polymer is acrylates copolymer. The preferred phosphate ester-type emulsifier is cetyl phosphate.

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The auxiliary lipophilic skin conditioning agents include a combination of isodecyl oleate, dimethicone and cyclopentasiloxane and it may also contain extracts of Hippophae rhamnoides (sea buckthorn), Laminaria digitata (sea tangle), Macrocystis pyrifera (sea kelp) and Crithmum maritimum (sea fennel). Algae and Aloe barbadensis leaf juice may also be included.

The final composition may include other ingredients to improve stability and product aesthetics and further skin conditioning agents such as sodium hyaluronate and panthenol. The compositions can be applied before or after application of pigmented products or may be mixed with a pigment paste prior to application to moisturise the skin and achieve a visibly desirable cosmetic appearance. Many possible formulations illustrate the patent and the results of applying the compositions in conjunction with commercially available lipsticks, crème and powder eye shadows, face powder and mascara are described.

Title: Decubitus treatment system

US Patent: 9,750,781

Appl. No. 14/579,190

Date Granted: September 5, 2017

Assignee: Aloe Bioscience LLC.

The patent describes a wound cleaning solution comprising aloe vera gel and a balanced salt solution and a second composition comprising aloe vera gel and a thickening agent. A third composition is a moisture barrier cream comprising a vegetable-based emulsifier, a cosmetic ester for dry skin and an emollient, beeswax, a hydrogenated oil, glycerin, a buffering agent, aloe vera gel and water.

The balanced salt solution containing 10% aloe barbadensis leaf juice comprises 0.70% NaCl, 0.04% KCl, 0.026%CaCl₂, 0.22% NaHCO₃ and 0.04% Na₂HPO₄ and the pH is adjusted to pH 4.5 with phosphoric acid. The second composition containing 97.8% aloe barbadensis leaf juice is thickened with 2% xanthan gum and preserved with 0.1% sodium benzoate and 0.1% potassium sorbate.

For this abstract the moisture barrier cream is of interest because of its vegetable-based emulsifier system, diisostearoyl polyglyceryl-3 dimer dilinoleate and a formula is given as follows.

Ingredient	%w/w
Phase A	
1. Diisostearoyl Polyglyceryl-3 Dimer Dilinoleate	3.00
2. Cetearyl Ethylhexanoate	9.500
3. Isocetyl palmitate	9.500
4. Beeswax	0.600
5. Hydrogenated Castor Oil	0.400
Phase B	
1. Glycerin USP	3.000
2. MgSO ₄ ·7 H ₂ O	1.000

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3. Purified Water	43.00
4. Aloe 2,000	30.00
5. Preservatives	qs
6. Fragrance, if any (Apple, Cinnamon, Clove)	qs

It is suggested that other additives may be incorporated including extracts of green tea, lavender, calendula, chamomile, allantoin, panthenol and sodium hyaluronate and excipients and softeners such as petrolatum, organic shea butter and dimethicone.

Title: Cosmetic or dermatological composition comprising alkyl polypentoside vesicles, and method for preparing the same

US Patent: 9,730,880

Appl. No. 14/352,593

Date Granted: August 15, 2017

Assignee: Lvmh Recherche

Described are cosmetic or dermatological compositions containing a continuous aqueous phase in which are dispersed vesicles based on at least one alkyl polypentoside and ethanol and at least one surfactant having an HLB of less than 10, preferably sorbitan monolaurate. The alkyl polypentoside is obtained by reaction of the pentose, D-xylose, and two fatty alcohols, 1-decanol and 1-octanol.

The surfactant and alcohol are in a sufficient amount for the alkyl polypentoside to form vesicles that are dispersed in the continuous aqueous phase, wherein the vesicles each have a shell that is made of at least one double layer of alkyl polypentosides. The vesicles are utilised to deliver cosmetic active ingredients to target sites within the stratum corneum and epidermis and the inventors claim that the compositions, once applied to the skin, can significantly improve the cutaneous penetration of active agents encapsulated in the vesicles.

A long list of suitable active ingredients is given with an equally long list of intended effects including antiaging, promoting cellular or tissue longevity, skin depigmenting, bleaching or lightening and calmative, soothing, relaxing or anti-inflammatory activity. Compositions may take many forms, a formula for a simple aqueous gel is given as follows:

Phase A

Caffeine 1.0

Phenoxyethanol 1.0

Purified water qs 100

Phase B

Sodium acrylates copolymer 1.0

Hydrogenated polyisobutene 0.75

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Phospholipids 0.25

Polyglyceryl-10 stearate 0.25

Sunflower seed oil (*Helianthus annuus*) 0.25

Tocopheryl acetate <0.01

Phase C

Alkyl polyxylose 3.5

Sorbitan monolaurate 1.0

Ethanol 0.5

Preparation

Phase A and phase B were prepared and mixed together to obtain a homogeneous mixture. Phase C is added to (A+B), and mixed with a deflocculating paddle at a speed of 500 rpm for 15 minutes, allowing the formation of multilamellar vesicles. After homogenising, the vesicles formed are dispersed in the continuous phase of the composition thus prepared.

Title: Fragrance compositions comprising ionic liquids

US Patent: 9,840,680

Appl. No. 14/865,152

Date Granted: December 12, 2017

Assignee: The Procter & Gamble Co

The patent describes a fragrance composition comprising ionic liquids for enhanced evaporation of the perfume raw materials. It also relates to methods of use of the fragrance compositions for perfuming suitable substrates, particularly skin and hair. It claims a fragrance composition containing dimethyl benzyl carbonyl butyrate as a perfume raw material and at least two ionic liquids plus a volatile solvent and a low volatility co-solvent or a mixture of low volatility co-solvents.

The applicants claimed that the volatility of perfume raw materials can span a wide range and impact the evaporation rate and release of the fragrance components from a composition. For example, highly volatile perfume raw materials tend to smell citrusy, green, light and fresh and may be noticeable for only a few minutes after being applied to a substrate. Less volatile materials characterised by floral or fruity notes, may be detectable for several hours while the least volatile are typically heavy florals, sweet, musky and woody notes and can last for several days. Generally, this is not suitable for most fragrance compositions as consumers will use a fragrance composition and then remove it from their skin after a period of 8 to 24 hours or may wish to use another, differently scented product.

If perfumers wished to design a fragrance with materials that evaporate in a given period they would be restricted to the highly volatile characters and be unable to create fragrance profiles derived from the less volatile characters. The applicants claim there is a need to enhance the evaporation rate of the heavier materials and this can be achieved by the addition of ionic liquids to the composition. This would enable the creation of fragrance compositions that span a wider range of fragrance

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characters with substantially all the materials evaporated within a given time frame of 1 to 12 hours after application.

It was found that ionic liquids can be used to alter the volatility of compounds from a fragrance composition and a consequence of this increased evaporation is that fragrance constituents applied to a substrate will become very weak after a shorter period. Ionic liquids appear to aid in targeted increases in the evaporation of fragrance components derived from the less volatile perfume raw materials.

Ionic liquids are mixtures of anions and cations that are preferably odourless, have no effective vapour pressure and their polarity can be readily adjusted to be suitable for a wide range of perfume raw materials. Particularly preferable ionic liquids are ones that are fully miscible with the perfume raw materials to form a single-phase liquid or, if not entirely miscible, then co-solvents like triethyl citrate can be added to aid in their solubility. Example ionic liquids are given as sodium docusate and potassium acesulfame. The preferred volatile solvent is ethanol and preferred low volatility co-solvents include benzyl benzoate, diethyl phthalate, isopropyl myristate, propylene glycol, triethyl citrate, and mixtures thereof.

The patent is very detailed with extensive lists of raw materials and their vapour pressures used in perfumery plus extensive data on methods of testing and those interested are urged to study the whole document.

Title: Perfume and cosmetic composition with anti-stress and relaxing effect

US Patent: 9,248,320

Appl. No. 13/257,186

Date Granted: February 2, 2016

Assignee: Amorepacific Corporation

Stress refers to a state of psychological or physical tension felt under difficult environments. Moderate stress can be beneficial since it gives an impetus of life and promotes efficiency and productivity. However, excessive stress is an important health risk factor, so it is important to recognise and manage stress for maintaining and promoting health.

It is claimed that the essential oils used in aromatherapy relieve stress and maintain the balance of autonomic nerves and thereby enhance immune functions. According to a subjective evaluation study referenced in the patent on stress and aromatherapy, inhalation of aroma oils resulted in reduced stress in working environments.

The patent describes a perfume composition designed to have an anti-stress effect and a cosmetic composition having an anti-stress and relaxing effect. The perfume composition comprises 50 % grapefruit oil, 20 % bergamot oil, 10% pine oil, 5 % lemon oil, 5 % cypress oil, 0.1 to 5 % rose oil, 0.1 to 5 % armoise oil, and 0.001 to 1.0 % Helichrysum extract; based on the total weight of the perfume composition. The applicants claim that grapefruit oil and bergamot oil have the effect of stabilising and relaxing mind and body, and the other essential oils further improve the stress relieving effect.

Helichrysum extract is reported to have superior antibacterial and anti-inflammatory properties and be effective in promoting formation of collagens. By adding about 1% of the perfume composition

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containing grapefruit oil and bergamot oil, together with the Helichrysum extract to a cosmetic composition the effect of relieving stress and relaxing mind and body may be expected.

The patent describes the tests performed to show the stress relieving and relaxing effect of the perfume composition. Twenty subjects were individually isolated within a testing laboratory and sensors to detect brainwaves and physiological signals were attached to the subject. After allowing 2 minutes for relaxation, the subject was asked to close eyes and the sample was provided for 1 minute at 1-2 cm from the nose. Physiological responses were measured while the subject smelled the sample and after the test the subject was asked to answer a questionnaire about subjective feelings. These tests are fully described in the patent and results show that subjects were feeling more comfortable and relaxed after exposure to the perfume composition.

This collection of patent abstracts brings together one on hair gels, one on hair conditioning and conditioning shampoos, one to restore broken disulfide bonds within a hair shaft and one on a 4-step permanent waving process.

Title: Cosmetic composition comprising a fixing polymer and a specific thickener and uses in styling

US Patent: 9,833,400

Appl. No. 13/821,047

Date Granted: December 5, 2017

Assignee: L'Oreal (Paris, FR)

The application of conventional styling gels presents problems of tackiness associated with very long drying times. Additionally, it is often difficult to ensure homogeneous distribution of the polymers over all the hair to be treated to obtain a uniform coating feel. The patent claims to overcome these disadvantages by presenting a hair styling composition comprising one or more cationic fixing polymers and one or more (meth)acrylic thickening polymers in compositions having high levels of alcohol. The compositions described may be applied without a reduction in viscosity over time, they dry rapidly and without a tacky effect and make it possible to give a natural and long-lasting the hairstyle.

Drilling down through the multitudes of materials claimed to be suitable as cationic styling polymers it appears that polyquaternium-4, polyquaternium-46 and hydroxypropyl guar are favoured. However, anionic styling polymers are also included in the example formulations including acrylates/t-butylacrylamide copolymer and various VP/VA copolymers.

Again, drilling down through the extensive examples of potential anionic thickening polymers, it appears that polyacrylates 14 and 32, polyacrylate-2 crosspolymer, AMP-acrylates/allyl methacrylate copolymer and acrylates/C10-30 alkyl acrylate crosspolymer are preferred. The alcohol content is at a minimum 75% by weight and the gels may contain perfume, PEG-14 dimethicone, glycols, panthenol and other additives to improve their product claims and aesthetics.

Title: Conditioning composition for hair

US Patent: 9,616,012

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Appl. No. 13/814,110

Date Granted: April 11, 2017

Assignee: KAO Germany GmbH

The patent describes an aqueous conditioning composition for hair comprising at least one cationic starch polymer and at least one additional cationic polymer with monosaccharide units. The compositions can be shampoos, cleansing-conditioning compositions or conditioners used after washing the hair.

The preferred cationic starch polymer is hydroxypropyl oxidized starch PG trimonium chloride present at up to 2.5%w/w and the preferred additional cationic polymer is guar hydroxypropyltrimonium chloride, also present at up to 2.5% w/w. This combination is claimed to make hair smooth and to confer improved looseness and bounce. Such effects are especially pronounced when hair is damaged and significantly improved properties were also observed with fine hair. Smooth hair has enhanced shine and volume and improved looseness and bounce gives extra body and volume.

The composition further contains silicone compounds, preferably amodimethicone or a derivative thereof, and silicone quaternium-22 with a total concentration up to 2.5%w/w. Additional conditioning agents including stearyl trimethylammonium chloride, cetrimonium chloride and panthenol are also named. The patent is illustrated with the following formulations.

Conditioning shampoo:

Ingredient (INCI names)	%w/w
Sodium laureth sulfate	11.0
Coco-glucoside	5.0
Cocamidopropyl betaine	3.0
Sodium cocoyl glutamate	1.0
Laureth-16	4.0
Guar hydroxypropyltrimonium chloride	0.5
Hydroxypropyl oxidized starch PG trimonium chloride	0.5
Benzophenone-3	0.2
Benzyl alcohol	0.5
Silicone quaternium-22	0.2
Ubiquinone	0.05
PEG-18 Glyceryl cocoate/oleate	1.1
Amodimethicone	0.20
Lactic acid q.s. to pH 5.0	
Perfume, preservative q.s. Water q.s. to 100	

Rinse-off Conditioner:

Ingredient (INCI names)	%w/w
Cetearyl alcohol	5.0
Stearyl trimethylammonium chloride	2.0
Benzyl alcohol	2.5
Guar hydroxypropyltrimonium chloride	0.5

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Hydroxypropyl oxidized Starch PG	0.5
Amodimethicone	0.9
Lactic acid q.s. to pH 5.0	
Perfume, preservative q.s. Water q.s. to 100	

The conditioner is a simple base to which other additions can be made, including cationic hair dyes like Basic Red 51 and Basic red 76 to give warm blonde tones.

Title: Methods for fixing hair and skin

US Patent: 9,855,447

Appl. No. 4/835,223

Date Granted: January 2, 2018

Assignee: Liqwd, Inc.

Hair consists of many long protein chains composed of amino acid building blocks bound to each other via hydrogen bonding, salt bridges between acid and base groups, and disulfide bonds. Repeated washing with slightly alkaline shampoo, hair colouring with oxidative hair dyes, hair perming or use of heated styling tongs damages the hair by breaking the disulfide bonds. This causes the cuticle or outer surface of the hair to become rough, hair lacks shine and is difficult to brush or comb and ends may split. The patent describes compositions, kits, and methods for repairing disulfide bonds to provide a long lasting, smooth, moisturised feel with increased tensile strength, ease of combing and less hair breakage and frizz.

The essential part of the patent is a binding agent that restores broken disulfide bonds and this is added as a solution to the hair prior to shampooing, colouring or other hair treatment process or it may be added to the actual treatment composition before use. The binding agent contains at least two reactive moieties capable of reacting with a thiol and optionally contains a linker that forms two or more ionic bonds between the reactive moieties. The reactive moieties, upon reaction with thiol groups on the hair follicle, form bonds that are stable.

The binding composition comprises a bismaleate, 2,2'-(ethane-1,2-diylbis(oxy))bis(ethan-1-amine)di-maleate that is supplied as a dry powder to be used at a concentration of 300mg in 10g of water or treatment composition. It is suggested that the binding agent covalently binds at least two thiol groups in the hair and prevents reversion of the repaired bonds to their free thiol state.

Title: Composition and process for permanent shaping of human hair

US Patent: 9,554,980

Appl. No. 13/993,500

Date Granted: January 31, 2017

Assignee: KAO Germany GmbH

Permanent shaping of hair is carried out according to a two-step process. In the first step, the reductive splitting of the cysteine disulfide bonds is achieved by a reducing agent, and in the second

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step, neutralisation, is carried out by application of an oxidising agent, whereby the cysteine disulfide bonds are restored in the new shape.

In general terms hair is shampooed then shaped using curlers then the reducing composition is applied. The reducing composition according to the patent consists of 10.5 – 12.5%w/w ammonium thioglycolate and polyquaternium-86 at a concentration of 0.2 - 0.5%w/w. It has a pH of 8 – 9.5. After a processing time of 1 -30 min at a temperature of 20 - 45C it is rinsed from the hair prior to application of the oxidising composition. The oxidising composition is pH 3 - 5 and comprises hydrogen peroxide at a concentration of 0.5 - 10% by weight. The oxidizing agent is applied at a temperature range of 20 - 45C and rinsed from hair after about 8 minutes and the curlers removed.

The patent also describes intermediate steps involving the optional application of a solution of an inorganic salt and polyquaternium-86 prior to application of the reducing composition and again, before application of the oxidising solution. Application of these solutions is claimed to significantly improve results. The patent describes many additional ingredients that may be added to improve efficacy, aesthetics and shelf life and is illustrated by the following representative formulations.

Pre-treatment Composition

Ingredients (INCI Names)	%w/w
Polysorbate-80	0.2
Magnesium sulfate	5.0
Polyquaternium-86	1.0
Cetrimonium chloride	1.0
Arginine	0.5
Citric acid q.s. to pH 4.2	
Water q.s. to 100	

Reducing Composition:

Ingredients (INCI Names)	%w/w
Ammonium thioglycolate (60%)	21.3
Ammonium hydrogen carbonate	5.0

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1,3-butylene glycol	3.0
Amodimethicone	0.2
PEG-40-Hydrogenated castor oil	0.7
Polyquaternium-86	0.5
Perfume	0.4
Ammonia, (25%) q.s.to pH 8.3	
Water q.s. 100.0	

Intermediate Composition

Ingredients (INCI Names)	%w/w
Coenzyme Q10	0.2
Polysorbate-80	0.2
Polyquaternium-86	1.0
Magnesium sulfate	10.0
Cetrimonium chloride	0.5
Citric acid q.s. to pH 4.2	
Water q.s. to 100	

Oxidising Composition

Ingredient	%w/w
Hydrogen peroxide	2.0
Polquaternium-86	0.2
Phosphoric acid q.s. to pH 3.5	
Water q.s. to 100	

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Nutraceuticals is a broad umbrella term that is used to describe any product derived from food sources with extra health benefits in addition to the basic nutritional value found in foods. The following patent abstracts are of nutraceuticals that have possible cosmetic benefits.

Title: Tetrapeptides and a method of use as an antioxidant

US Patent: 9,795,551

Appl. No. 14/315,585

Date Granted: October 24, 2017

Assignee: L'Oreal (Paris, FR)

Antioxidants are compounds that can delay the oxidation of organic molecules by the inhibition of oxidizing chain reactions. Conventionally employed biologically safe antioxidants include vitamin C, carnosine, glutathione and resveratrol. Carnosine is a natural dipeptide that is innate to vertebrates and found to act as a pH buffer, iron-chelating agent and in lipid peroxidation. Proteins may also have antioxidative activities against free radical oxidation of lipids and fatty acids and certain peptides can react with free radicals to terminate the radical chain reaction. Enzymes such as superoxide dismutase (SOD), catalase and glutathione peroxidase also play a key role in cellular defence against oxidative stresses.

A study of antioxidant properties of short polypeptide molecules by the applicants identified specific structure activity relationships and led to the discovery of cost effective short chain polypeptides having antioxidant activity comparable to known antioxidants such as vitamin C and carnosine. Claimed is a method for attenuating effects of free radicals on a keratinous material by applying a composition comprising, in a physiologically or pharmaceutically acceptable medium, at least one antioxidant.

The peptides are tetrapeptides and have the empirical sequence "tryptophan-arginine-tyrosine-arginine" or "tryptophan-lysine-tyrosine-lysine", They showed antioxidant properties comparable to or better than vitamin C and carnosine. The tetrapeptides may be topically applied to the skin in the form of a cream or lotion, to the hair as a shampoo or be ingested orally in the form of a nutraceutical with the usual excipients and components for oral compositions or food supplements.

Title: Monounsaturated fatty acid for preventing and/or treating skin complexion imperfection

US Patent: 9,730,905

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Appl. No. 13/883,700

Date Granted: August 15, 2017

Assignee: L'Oreal (Paris, FR); Nestec S.A. (Vevey, CH)

Described is a nutraceutical for cosmetic use comprising an effective amount of at least one monounsaturated fatty acid, a salt thereof and/or an ester thereof for treating or preventing skin complexion imperfections. A comprehensive list of the skin imperfections that cannot be treated by the composition is followed by the claim that the invention makes it possible to give a less dull, less blurry, less grey and more radiant skin complexion.

The preferred monounsaturated fatty acid is petroselinic acid and is used in the form of an oil from the seed oils of coriander, chervil, carrot, celery, cumin, caraway, parsley and dill or mixtures thereof, which contain approximately 40% petroselinic acid. The oil is used in combination with at least one additional cosmetic active agent, chosen from vitamins B3, B5, B6, B8, C, or E, carotenoids, curcuminoids, niacin, flavonoids, one or more divalent mineral cations and bacteria or bacterial extracts derived from non-photosynthetic, filamentous bacteria, and probiotic microorganisms.

Use may be made of glucosamine, rosemary, carnitine, blueberry, sage, spinach, strawberry, green coffee or apple, which participate in the cohesion of the dermis. Actives which aid in cell renewal such as retinoids and plant hormones and anti-inflammatory agents like hesperidin or lactoferrin may also be included. Other possible additives are pro-desquamating agents, antioxidants, anti-seborrheic agents and antibacterial agents such as erythromycin.

The oral compositions may be either in anhydrous or aqueous form and may be formulated with excipients and components that are common for such oral compositions or food supplements. An example composition comprises coriander oil and *Lactobacillus johnsonii* in a sugar-coated tablet to be taken 1 to 3 times per day for about one week to significantly reduce dyschromia and to give the skin a uniform, luminous and radiant complexion.

Title: Use of derivatives of polyunsaturated fatty acids as medicaments

US Patent: 9,763,907

Appl. No. 14/869,080

Date Granted: September 19, 2017

Assignee: Lipopharma Therapeutics, S.L.

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This patent focused on 1,2-derivatives of polyunsaturated fatty acids (D-PUFAs) for use in the treatment of common diseases whose aetiology is related to structural and/or functional alterations of cell membrane lipids, or of the proteins that interact with them. Numerous diseases are cited but only those of an inflammatory nature such as oedema and inflammation resulting from trauma or burns may be capable of cosmetic treatment, however D-PUFAs have an increased potency to inhibit the proliferation of fat cells, suggesting a use for the treatment of cellulite.

According to the applicants the fatty acids can be administered alone or formulated in pharmaceutical or nutraceutical compositions, which combine with each other and with excipients such as binders, fillers, disintegrators, lubricants, coaters, sweeteners, flavouring excipients, colouring excipients, transporters, etc. and combinations of all of them. Also, the fatty acids can be part of pharmaceutical or nutraceutical compositions in combination with other active ingredients. Named D-PUFAs included derivatives of octadecadienoic acid, eicosapentaenoic acid and docosahexaenoic. Acid.

Title: Topical and oral formulations comprising taurine and magnesium for the prevention and treatment of acne

US Patent: 9,795,633

Appl. No. 15/179,815

Date Granted: October 24, 2017

Inventor: Margaret Jean (Manhattan Beach, CA):

Acne affects almost all people at some time during life, usually during teenage and young adult years, when sebum production increases in response to an increase of androgen production. Acne can become chronic, and can have a significant negative impact on quality-of-life. The patent claims topical and oral compositions for treating and/or preventing acne that include effective amounts of taurine and magnesium. The effective amount of taurine is in a range of about 500 mg to about 3000 mg per unit dose, and the effective amount of magnesium is in a range of about 25 mg to about 500 mg per unit dose and these are combined in a single oral supplement as a capsule or a tablet or a unit dose of powder.

The oral supplement may also contain one or more micronutrients selected from the group consisting of vitamins D, A, B2, B3, B5, C, E and K and/or zinc, choline, folic acid, calcium, iron, phosphorous, iodine, potassium, selenium, manganese, copper, inositol, omega 3 fatty acids, lycopene, lutein, and zeaxanthin. Treatment with the oral supplement may be enhanced by topically

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administering to the subject a composition in cream or gel form containing about 400 mg to about 4000 mg of taurine about 25 mg to about 500 mg magnesium per daily application. The gel or cream may also contain the combination of micronutrients claimed for the oral supplement.

The applicants suggest that taurine in the sebaceous glands likely helps stop excess lipogenesis, by binding as an inhibitory ligand to the liver X receptor-alpha. Magnesium helps activate the breakdown of the large lipid droplets in the sebaceous glands and sebaceous ducts via magnesium-activated protein kinase phosphorylation of the lipid droplet surface protein perilipin. This process allows perilipin to direct lipolysis of lipid droplets, fragmenting them into many micro-lipid droplets and dispersing them. Taurine and magnesium have been found to work synergistically, in that taurine can facilitate the transport of magnesium across cell membranes. The simultaneous use of taurine with magnesium was found to treat acne much better than either taurine or magnesium used alone, and a topical composition can achieve rapid penetration of taurine and magnesium into skin.

The oral supplement is claimed to provide an assortment of micronutrients to help prevent micronutrient deficiencies that could interfere with treatment of the skin. Most micronutrients are known to have effects on the skin, so trying to ensure that the skin obtains adequate levels could potentially help with the ability of the topical and oral dosages of taurine and magnesium to treat and prevent acne.

The following abstracts illustrate a way of suspending particulates in a shower gel; a method of improving delivery of fragrance from surfactant-based products; using yogurt powder to support the skin's natural defence against pathogenic organisms and finally, an all-natural shower gel. Note: All % are by weight

Title: Personal liquid cleanser product with particulate bicarbonate suspension phase

US Patent: 5,824,324

Appl. No. 08/744,526

Date Granted: October 20, 1998

Assignee: Church & Dwight Co., Inc

The patent describes a fluid detergent formulation suitable for application as a personal cleanser for bath or shower usage. A feature is a stable suspension phase of particulate alkali metal bicarbonate, which functions as a buffering agent, and it provides deodorizing, exfoliating and water-softening benefits for skin conditioning.

The composition comprises a surfactant; an alkali metal bicarbonate; a suspending agent; a thickening agent and a hydrophilic silicone-polymer. The composition has a pH between about 7-

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10.5 and a viscosity up to 145,000 centipoises. Sodium bicarbonate is the preferred salt and, because it is in suspension, a large proportion can be incorporated without the limitation of solubility. The salt also serves as a mild exfoliant when in contact with a skin surface.

The hydrophilic silicone-polymer has a gelling effect and it is a foam modifier and contributes to a smooth skin-feel. Preferred is dimethicone copolyol. The surfactant combination is typically sodium laureth sulphate with cocamidopropyl betaine. A second gelling agent is hydroxymethyl cellulose and ethylene glycol monostearate is incorporated as part of the suspending agent and it also imparts a sheen to the composition.

Title: Multiphase surfactant fragrance composition

US Patent: 10,106,763

Appl. No. 14/401,814

Date Granted: October 23, 2018

Assignee: Colgate-Palmolive Co

In surfactant-based cleansing compositions a large portion of the fragrance can be solubilized by the surfactant and not released during application of the product. The fragrance release from a single component composition containing surfactant and fragrance can be increased by separating the fragrance and surfactant into a multicomponent composition.

The patent describes a multiphase composition with surfactant and fragrance at least partially separated in different phases that will deliver a burst of fragrance when incorporated in a shower gel or bath additive. The type of surfactant can be any combination of anionic, amphoteric, zwitterionic, cationic or non-ionic surfactants. Preferred is sodium laureth sulphate with cocamidopropyl betaine. The composition can be structured by any known structuring agent including polymers, gums or celluloses or by salt, however the examples all show Carbopol Aqua SF-1 polymer, INCI Name: Acrylates copolymer.

The first phase comprises at least 75% of the total surfactant and the second phase is at least 75% of the total fragrance content of the composition. Optionally, additional phases can be present and the weight ratio of the first phase to the second phase can be any desired ratio. The multiphase composition can separate the phases by containing each of the phases in separate chambers in a multi-chamber container that allows for simultaneous dispensing of the phases together. Alternatively, the phases can be in physical contact with each other and each structured to have a yield stress that does not allow the phases to mix.

Title: Use of cosmetic cleaning compositions as a prebiotic

US Patent: 10,085,934

Appl. No. 15/376,204

Date Granted: October 2, 2018

Assignee: Henkel AG

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The applicants explained that a multitude of different bacteria reside on the human skin surface, some of which are pathogenic and must be considered harmful. Other skin microbes provide a positive action and are known as "saprophytic bacteria". Their presence inhibits the reproduction of harmful bacteria, and as a result they exert a protective function on the skin. It is therefore desirable to influence the skin flora to the effect that the growth of pathogenic bacteria is reduced, and the growth of saprophytic bacteria is favoured.

Cosmetic cleansing agents usually include surfactants, which due to their irritating effect, can adversely influence the skin flora and are therefore not recommended for use on blemished skin or skin suffering from acne. Claimed is a prebiotic composition that includes spray-dried yoghurt powder and at least one anionic surfactant and at least one fatty acid soap that may be used for inhibiting the growth and the physiological activity of undesired skin bacteria and for supporting the growth of desired skin bacteria.

The composition, when created as a shower gel or personal cleansing liquid, preferably includes 3 – 8% anionic surfactant; 1-6% amphoteric surfactant; up to about 2% of a cationic polymer and up to about 3% spray-dried yogurt powder. Alternatively, the composition may also contain up to 75% of a fatty acid soap and be in the form of a solid cleansing bar. The anionic surfactant is preferably one known for mildness such as a glutamate or sarcosinate. The preferred amphoteric is cocamidopropyl betaine or coco betaine and the preferred cationic polymer is polyquaternium-7. The preferred fatty acid soap is sodium olivate or the sodium salt of palm kernel acids. Talc is an optional additive that, in combination with the yogurt powder, is said to improve skin suppleness and moisture.

Other preferred additives are coco-glucoside and PEG-40 hydrogenated castor oil. Glycerin up to 5% and vitamins, plant extracts, milks and juices may also be included plus preservatives, chelating agents and fragrance.

The applicants claim that if the composition is used as a shower gel, facial cleanser or soap it results in a selective elimination of undesirable skin bacteria, without adversely influencing the desirable skin bacteria. Moreover, it has the advantage that the skin is nourished, moisturised and soothed, which results in a general improvement of the complexion, especially in the case of blemished skin.

Title: Natural formulations

US Patent: 10,064,881

Appl. No. 13/992,309

Date Granted: September 4, 2018

Assignee: Y&B Mother's Choice Ltd

The applicants claim that the composition comprises a naturally-obtained saponin material, at least one naturally-obtained thickening agent, at least one naturally-obtained humectant, at least one naturally-obtained preservative and at least one naturally-obtained additive. They also claim that each of the components is obtained from a natural source in a substantially unmodified form and may be organic or aqueous extracts and/or minerals and electrolytes, or fermentation products.

Provided is an all-natural foaming personal care cleansing composition comprising naturally-obtained plant extracts. The patent is particularly obscure with many embodiments so as always, anyone interested is urged to study the entire publication. The foaming element is an

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aqueous/alcoholic extraction of saponin material from *Sapindus mukorossi* and/or an extract of *Camellia oleifera* present in an amount ranging from 5 to 20%. The thickening agent is gum Arabic or guar gum, Konjac gum, tragacanth gum, xanthan gum or carrageenan or a mixture of two or more of these.

The humectant may be vegetable glycerin, sorbitol or honey. The natural preservative may be one or more plant extracts, and many are listed. An extract of *Salix alba* appears to be favoured in combination with propionic acid, but more complicated cocktails are described. Detailed challenge testing showed that the preservative cocktail alone did not reduce the total microorganisms count below 1000 but in combination with the *Sapindus Mukorossi* extract the total microorganisms count was below 10. indicating a synergistic effect between the extract and the preservative cocktail.

[Abstractors note: The plant extract is in 50% aqueous/ethanol solution, so this would be very helpful]

Possible additives are numerous and include betaine, squalane, rhamnose and colloidal oatmeal. The patent is well illustrated with formulations for foaming compositions although most are for shampoo. It is of value for the myriads of natural materials referenced and for the exhaustive testing the applicants undertook to support their application.

Title: Hyaluronic acid gel and manufacturing method thereof

US Patent: 9,855,206

Appl. No. 14/436,463

Date Granted: January 2, 2018

Assignee: Cosmed Pharmaceutical Co., Ltd. (Kyoto, JP)

Hyaluronic acid is contained in the human body and has excellent biocompatibility and moisture retaining action. It is a linear polymeric polysaccharide prepared by isolation and extraction from crest and umbilical cord of chicken or by fermentation using microorganisms such as *Streptococcus*. Hyaluronic acid gel is usually prepared by crosslinking hyaluronic acid through chemical modification, however such gel is poorly water-soluble, and it is unsuitable for providing moisture and tension to the skin.

The patent describes a hyaluronic acid gel suitable for cosmetic and medical use comprising hyaluronic acid, a polycarboxylic acid and a polyhydric alcohol. It further contains at least one or more compounds selected from a group consisting of hydroxypropyl cellulose, polyvinylpyrrolidone, polyvinyl alcohol, carboxymethylcellulose, polyacrylic acid and polyethylene glycol. It is claimed that, by exploiting the properties of hyaluronic acid, the gel has flexibility, elasticity and tensile strength and will adhere tightly to the skin to moisturise it. Furthermore, if the gel is applied to skin and the skin is then massaged with water the gel will rapidly dissolve and the hyaluronic acid and other ingredients will be absorbed by the skin. Additionally, when the gel is applied to skin, a large amount of the polyhydric alcohol contained in the gel is hydrated with water to generate heat, and it gives mild warming sensation.

The polycarboxylic acid is selected from a group consisting of citric acid, tartaric acid and lactic acid and the preferred polyhydric alcohol is glycerin. The gel may also contain whitening, anti-wrinkle, anti-itching and anti-inflammatory ingredients and blood circulation promoting components,

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antimicrobials and antioxidants and various vitamins and their derivatives plus pigments, fragrances and other cosmetically beneficial materials.

Aqueous solutions of each component are mixed together to form a homogenous solution, which is then poured into moulds and the moisture content evaporated to form a suitable sheet shape such as a whole-face sheet or an eye sheet, the thickness of which is preferably 30 microns to 1 mm. The patent describes various weight ratios of the components and how gel sheets were tested for flexibility, tensile strength, adherence to skin and moisturising effects.

Title: Formation of hydrated nanocellulose sheets with or without a binder for the use as a dermatological treatment

US Patent: 9,816,230

Appl. No. 14/986,578

Date Granted: November 14, 2017

Assignee: Innovatech Engineering, LLC

Hydrogels are often used for dermatological masks because of the large amount of water they can hold. Unfortunately, these masks have a low degree of conformability to the skin and are not porous. Described is a method for manufacturing a hydrated non-woven nanocellulose sheet having dermatologically active ingredients. The sheet is formed through a high pressure or vacuum filtration process from a dilute suspension of the nanocellulose. The suspension may also contain dermatologically active ingredients and binding agents that improve the strength of the sheet. These may be crosslinked after the formation of the sheet by applying chemical agents.

Manufacture involves providing purified nanocellulose into a first suspension to a mass concentration up to 10 grams per litre in water, alcohol or oil. The suspension is filtered with positive pressure or vacuum to form a sheet, which is dipped into a solution of crosslinking agents such as calcium citrate, lactate, chloride or stearate, followed by dipping into an ingredient slurry to absorb any actives required. The sheet is then cut into a form, such as a facial mask, neck wrap or under eye masks and sealed into an airtight package

Title: Active ingredient combinations of magnolia bark extract and hyaluronic acid and the cosmetic and/or dermatological use thereof

US Patent: 9,402,801

Appl. No. 14/411,688

Date Granted: August 2, 2016

Assignee: Beiersdorf AG

The patent relates to active ingredient combinations of magnolia bark extract and hyaluronic acid preparations and their use for the treatment or prophylaxis of cellulite and the appearance of skin aging. The preparations further comprise anise fruit extract (Pimpinella anisum fruit extract) obtained by enzymatic hydrolysis of anise fruits solubilised in water. Anise fruit extract is rich in inorganic minerals such as sodium and magnesium ions, but particularly in potassium ions.

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Claimed is a topical cosmetic or dermatological preparation comprising from 0.05% to 5% of magnolia bark extract, from 0.05% to 5% of hyaluronic acid and 0.1% to 15% of anise fruit extract. The preparation is a cream, lotion or cosmetic milk in emulsion form and it is claimed that when applied to areas of the skin with cellulite the skin is tightened, and firmed and skin moisture is also increased, and lipid synthesis stimulated.

The oil phase is described at some length and of all the materials mentioned mixtures of cyclomethicone and isotridecyl isononanoate or of cyclomethicone and 2-ethylhexyl isostearate were cited as being particularly advantageous. Other constituents added to improve aesthetics and shelf life include consistency regulators, fillers, perfume, dyes, emulsifiers, additional active ingredients such as vitamins or proteins, light protection agents, stabilisers, insect repellents, alcohol, water, salts and antimicrobial, proteolytic or keratolytic substances.

Title: Depilatory formulations and methods of using same

US Patent: 9,795,558

Appl. No. 14/418,948

Date Granted: October 24, 2017

Assignee: Reckitt & Colman (Overseas) Ltd.

The applicants claim that depilatory formulations require a strong alkaline pH to achieve chemical cleavage of the keratin bond in the hair. Formulations must be applied to a user's skin and left for a period of up to 10 minutes prior to removal and the high alkaline pH of such formulations causes significant irritation to the skin of a user.

The patent describes a formulation suitable for use as a pre-use depilatory ancillary comprising a hydrophobic film-forming polymer and a suitable solvent. The hydrophobic film-forming polymer is polyamide-3, the solvent is propylene glycol and the ratio of solvent to hydrophobic film-forming polymer is between 5:1 and 2:1. The ratio of solvent to film-forming polymer is such that the formulation dries on the skin and forms a protective layer.

The pre-use depilatory formulation further comprises one or more excipients selected from the group consisting of skin feel enhancers, humectants, emollients, anti-irritation compounds and cosmetic actives. The preparation is preferably formulated as an emulsion comprising between 1% and 10% silicone wax, between 1% and 10% of a mixture of mineral oil, silicone and emollient esters plus a surfactant and a polymer.

The patent also claims depilatory combinations that comprise a pre-use formulation and a depilatory formulation. The depilatory preparation contains a compound capable of degrading keratin and many such materials are listed. This is present at preferably 10% - 15% in aqueous solution and the pH is adjusted by the addition of a suitable hydroxide so that the pH is preferably 9 – 12.5, A non-ionic surfactant and urea to accelerate the reaction plus suitable additives to improve the aesthetics and stability of the preparation are included.

An example formulation for the depilatory is shown as follows:

Ingredient	%w/w
Deionised Water	61.74

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Cetearyl Alcohol	4.40
Ceteareth-20	1.76
Mineral Oil	4.80
Glycerin	1.00
Talc	2.00
Calcium Hydroxide	3.20
Magnesium trisilicate	0.50
Sodium Gluconate	0.10
Na Mg Silicate	0.20
Urea	8.00
Acrylate Copolymer	0.10
Potassium Thioglycolate	10.00
Fragrance Citrus Glow	0.40
White Paste	0.60
Sorbitol	1.00
Aloe Vera	0.10
Vitamin E	0.10
Total	100

The following patents describe a synergistic combination of organic sunscreens; a sunscreen lotion that releases water droplets on application and a self-tanning combination of natural extracts and an SPF15 lotion that incorporates them.

Title: Sunscreen compositions having synergistic combination of UV filters

US Patent: 9,572,759

Appl. No. 14/750,299

Date Granted: February 21, 2017

Assignee: L'Oreal (Paris, FR)

The patent describes sunscreen compositions having a synergistic combination of ultraviolet light (UV) filtering agents that provide a high sun protection factor (SPF). The combination of filters comprises butyl methoxydibenzoylmethane, ethylhexyl triazone, drometrizole trisiloxane, homosalate, ethylhexyl salicylate, octocrylene, and terephthalylidene dicamphor sulfonic acid. The maximum level of any one UV filter is 6% and the maximum total level is 35% by weight, based on the total weight of the composition.

The applicants claim that it is desirable to achieve the best photo protection efficacy with the lowest amount of UV filters and that they discovered ways to attain SPFs that were not previously attainable with such low amounts of overall UV filters. This synergy is found when certain UV filters are combined in particular ratios and is illustrated by the following table that shows the SPF obtained when a spray-on composition containing the patented combination was in-vitro tested.

UV Filter (INCI)	Ex 1: %w/w	Ex 2: %w/w
Butyl methoxydibenzoylmethane	3.0	4.2
Ethylhexyl triazone	1.5	4.0

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Drometrizole trisiloxane	4.0	1.4
Homosalate*	10.0	1.0
Ethylhexyl salicylate	5.0	3.8
Octocrylene	5.0	1.19
Terephthalylidene dicamphor sulfonic acid	0.33	0.3
Total %w/w of sunscreens	28.83	15.89
Spray-on composition	71.17	84.11
In-vitro SPF	59.40	62.70

*Homosalate at 10% despite claim of 6% max. for any individual UV filter!

Title: Sunscreen composition containing high levels of liposoluble UV filters

US Patent: 9,655,825 Appl. No.

Date Granted: May 23, 2017

Assignee: L'Oreal (Paris, FR)

The patent describes a sunscreen emulsion composition with a water-releasing effect that includes an oil phase containing a liquid organic liposoluble UV filter and a solid organic liposoluble UV filter at a combined concentration from about 10% to about 25%. The composition has a sun protection factor (SPF) of greater than or equal to 15 and a critical wavelength of greater than 370 nm. In use water is released from the emulsion in a plurality of droplets upon application of shear.

The preferred emulsifier system is dimethicone/PEG-10/15 crosspolymer with PEG-15/lauryl polydimethylsiloxyethyl dimethicone crosspolymer although other silicone-based emulsifiers are named. The PEG-15/lauryl polydimethylsiloxyethyl dimethicone crosspolymer entraps the water, which is released upon application to the skin and it significantly enhances the aesthetics of the composition. This emulsifier system is present in combination with a second emulsifier sold as Dow Corning 5225C with the INCI composition of cyclopentasiloxane and PEG/PPG-18/18 Dimethicone.

The preferred liquid organic liposoluble UV filter consists of a combination of octocrylene, and ethylhexyl salicylate and the preferred solid organic liposoluble UV filter is butyl methoxydibenzoylmethane but many other UV filters are listed and incorporated in the patent. The oil and aqueous phases may contain all those ingredients in typical use for this type of composition. The following formulations were deemed stable and they released water droplets when applied to the skin.

Ingredient	%w/w	%w/w
Dicaprylyl ether	3.0	3.0
Octocrylene	7.0	7.0
Ethylhexyl salicylate	3.0	3.0
Butyl methoxydibenzoylmethane	3.0	3.0
Dimethicone (and) PEG 15/lauryl polydimethylsiloxyethyl dimethicone crosspolymer	3.6	8.6
Dimethicone (and) dimethicone/PRG-10/15 crosspolymer	5.0	0.0
C30-45 alkyl dimethylsilyl polypropylsilsesquioxane (and) paraffin	2.0	2.0
Aqua/Water	51.9	51.9
Glycerin	15.0	15.0

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Propylene glycol	4.0	4.0
Caprylyl glycol	0.5	0.5
Methyl methacrylate crosspolymer	2.0	2.0
SPF (In-vitro)	25	25
Critical wavelength	381nm	380nm

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Title: Composition with improved tanning effect

US Patent: 8,986,718

Appl. No. 13/435,610

Date Granted: March 24, 2015

Assignee: Coty Germany GmbH

Claimed is a cosmetic composition for use in tanning human skin comprising 0.05 to 2.0% Caffeine; 0.01 to 1.0% Glycine; 0.001 to 0.2% Hydrolyzed Citrus Aurantium Dulcis Fruit Extract, 0.05 to 0.5% Sodium Lactate Methylsilanol and 0.05 to 3.0% Mauritia Flexuosa Fruit Oil and up to 100% of dermatological or cosmetic auxiliaries selected from the group consisting of: water, vitamins, a mixture of the plant extract of Angelica Archangelica Root Extract, Camellia Sinensis Leaf Extract, Pongamia Pinnata Seed Extract and Coffee Arabica Seed Extract, synthetic polymers, esters, ethers, fatty acids, monovalent and multivalent alcohols, silicones and silicates; all percentages being % by weight and related to the total weight of the cosmetic composition.

The Hydrolyzed Citrus Aurantium Dulcis Fruit Extract is prepared by extraction with water at temperatures of 20-35°C. The Mauritia Flexuosa Fruit Oil is an oil obtained by cold pressing of the fruit pulp. The fruit contains carotenoids and fatty acids such as oleic acid and palmitic acid. Sodium Lactate Methylsilanol is obtained by condensation of a synthetic derivative of silicon on lactic acid. The silicon derivative is obtained by synthesis, the lactic acid is obtained by fermentation from sugar. Caffeine is readily available as a solid white powder.

The active ingredients are incorporated in a composition that may also contain typical ingredients for this product type including water, vitamins, other plant extracts and mixtures of extracts, synthetic polymers, esters, ethers, fatty acids, monovalent and multivalent alcohols, silicones and silicates. A preferred optional plant oil is Red Palm Oil which supports the tanning action, together with Bixa Orellana Seed Extract. Other preferred optional ingredients are beta-carotene and alpha-tocopherol.

The tanning composition of the invention can be used in many different cosmetic products including, pre-sun products, sun products, after-sun products, self-tans and make-ups, The patent is illustrated with various formulations including one for an SPF15 lotion with artificial tanning properties.

Tanning Lotions SPF 15

Ingredients	%w/w	%w/w	%w/w
Phase A			
Isoamyl P-Methoxycinnamate	2.0	2.0	2.0
Ethyl Hexyl Triazone	1.0	1.0	1.5
Butyl Methoxydibenzoylmethane	3.0	3.0	3.5
Bis-Ethylhexyloxyphenol Methoxy phenyl Triazine	1.0	1.0	0.8
Diisopropyl Sebacate	8.0	5.0	6.5
Cetyl Alcohol & Glyceryl Stearate & PEG-75 Stearate & Ceteth-20 & Steareth-20	1.3	1.6	1.8
Cyclopentasiloxane & Cyclohexasiloxane	3.5	3.2	2.8
Hydrogenated Palm Kernel	0.8	1.2	0.9

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Glycerides & Hydrogenated Palm Glycerides & Mauritia Flexuosa Fruit Oil	0.1	0.5	1.5
Vegetable Oil & Hydrogenated Vegetable Oil & Euphorbia Cerifera (Candelilla) Wax	2.4	2.3	2.7
Phase B			
Water q.s. ad to 100% by weight	64.21	63.23	55.77
Disodium EDTA	0.09	0.06	0.08
Sodium Polyacrylate	0.25	0.3	0.2
Glycerine	5.0	4.0	6.0
Ammonium Acryloyldimethyltaurate/ VP Copolymer	0.15	0.3	0.5
Caffeine	0.3	0.8	0.6
Butylene Glycol	1.0	2.5	3.0
Phase C: Cyclopentasiloxane & Dimethiconol	2.0	2.1	2.5
Phase D Plant Extract Mixture			
Alcohol & Coffea Arabica (Coffee) Seed Extract & Camellia Sinensis Leaf Extract & Pongamia Pinnata Seed Extract & Angelica Root Extract	0.2	0.8	0.5
Glycine	0.07	0.1	0.5
Hydrolyzed Citrus Aurantium Dulcis Fruit Extract	0.03	0.2	0.07
Sodium Lactate Methylsilanol	0.25	0.02	0.3
PEG-8 & Tocopherol & Ascorbyl Palmitate & Citric Acid & Ascorbic Acid	0.1	0.09	0.08
Fragrance	0.25	0.2	0.4
Alcohol (Ethanol)	3.0	4.5	5.5
Total (all parts by weight)	100	100	100

Phase A is heated to 75°C; Phase B is heated to 75°C. Phase A is added to Phase B and emulsified while stirring, then cooled to 50°C. Phase C is added while stirring. Further cooling while stirring to <30° C and then Phase D is added while stirring till homogeneity

Teen skin is prone to acne, which is attributed to multiple factors such as increased sebum production, alterations of the quality of sebum lipids, inflammatory processes, dysregulation of the hormone microenvironment, and interaction with neuropeptides, follicular hyperkeratinisation and the proliferation of pathogenic bacteria within the follicle and that may form a biofilm on the skin.

The following abstracts look at diverse ways of reducing the risk of teenage acne.

Title: Composition for the treatment of acne

US Patent: 9,950,023

Appl. No. 14/550,108

Date Granted: April 24, 2018

Applicant: Parham Tabibian

Pathogenic organisms like P. Acnes may form a biofilm on the skin that is difficult to remove and can lead to an inflammatory response and the formation of comedones and pustules. The patent claims

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an all-natural composition for treating acne comprising: N-acetylcysteine (NAC), nicotinamide, resveratrol, rhodionin, epigallocatechin gallate (EGCG), allicin, propolis and vitamins A, E and D3 and may also contain Aloe barbadensis and piperine.

Alliin is produced by the interaction of the enzyme alliinase with garlic's alliin when garlic is chopped or crushed. In the human body, allicin activates genes which in turn cause release and activation of internal enzymatic antioxidant defences such as glutathione, catalase, and superoxide dismutase. Documented beneficial properties of propolis are its antioxidant, anti-inflammatory and anti-microbial actions and propolis has been included for its role against biofilms. N-Acetylcysteine (NAC) shows inhibitory effects against biofilms produced by various bacteria including *P. acnes*. Resveratrol is known for its anti-inflammatory and antioxidant effects and has anti-androgen and biofilm inhibitory properties.

Aloe barbadensis contains vitamins, enzymes, minerals, sugars, lignin, saponins, salicylic acids and amino acids and has anti-inflammatory properties. Nicotinamide decreases sebum production by inhibiting sebaceous lipogenesis and provides an anti-inflammatory effect. Rhodiola is an adaptogen, plant-based compound that promotes homeostasis and can reduce stress-induced cortisol levels. Epigallocatechin gallate (EGCG) is included for reducing sebum production and its anti-inflammatory benefits. Vitamin A is included for normalising keratinization and for reducing sebum production. Vitamin D3 suppresses cell proliferation in the sebaceous glands and reduces the production of sebum. Vitamin E has a beneficial role in lipid peroxidation in sebaceous glands and is the major sebum antioxidant.

Although the composition as described is targeted for oral intake it is included because of the interesting properties claimed for its constituents.

Title: Chemical inhibitors of sebocyte function

US Patent: 9,822,136

Appl. No. 14/998,864

Date Granted: November 21, 2017

Inventors: Wei; Edward T., Kim; Seong J.

It is said that in young adults with acne, sebum production is increased on average by 59% and there is 2.2 times-fold increase in squalene content of the lipids. The patent describes amphiphilic compounds that may be useful for the management of sebum secretion in subjects with acne, oily skin, or seborrheic dermatitis. These compounds are 1-dialkylphosphorylalkanes dissolved in a dermatologically acceptable vehicle and delivered to the skin in a solution, gel, lotion, cream, or ointment.

The preferred dialkylphosphorylalkanes are 1-diisopropylphosphoryldecane, 1-diisopropylphosphorylundecane and 1-diisopropylphosphoryldodecane, collectively referred to as Dapa. A study of activity of Dapa agents were examined on human sebocytes, which showed a potent inhibitory effect on sebocyte function and it was noted that the amphiphilic characteristics of the Dapa enhance potency. The exact cellular targets that mediate these effects were not characterised, but these Dapa chemicals are believed useful in modulating disorders related to sebum secretion and for other disorders of lipid synthesis and cellular proliferation.

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It is claimed that the composition is for reducing proliferation of somatic cells, reducing malignant, unrestrained, proliferation of somatic cells, for reducing synthesis of lipids and for reducing sebum secretion.

Title: Methods of treating or ameliorating skin conditions with a magnetic dipole stabilized solution

US Patent: 9,867,849

Appl. No. 15/398,233

Date Granted: January 16, 2018

Assignee: Reven Pharmaceuticals, Inc.

The patent describes a composition comprising electro-activated water containing stabilised oxidative species, sodium chloride, sodium bicarbonate, 2 di-methyl amino ethanol HCl and one or more ingredient selected from the group consisting of vitamins, salts, acids, amino acids, one or more anaesthetics, heparin, folic acid, lipoic acid, and salts thereof and an antibiotic.

Electro-activated water is sterile and non-pyrogenic and is produced by exposing the water to a strong electro-magnetic field force in a tightly isolated and fully enclosed reactor space. It can produce both a negative (cathodic) and a positive (anodic) stream of activated water. Other patents are cited that claim therapeutic properties for electrolysed water including antimicrobial properties and for treating disease suggesting that the origin of disease may be an electro-physiological imbalance and that electrolyzed water can restore optimal pH.

It is also suggested that the loss of function, deterioration, destruction and death of human cells relates to the issue of human cellular reliance on oxygen metabolism. Oxygen uptake intracellularly is governed by the metabolic need for energy and takes place within the mitochondria to produce ATP, the cell's energy source. Such chemical reactions are not 100% efficient and the resultant release of highly reactive oxygen species is responsible for cellular damage. The effects of aging may be attributed, on a molecular level, to the oxidative processes in the cell which is harmful to proteins, lipids and nucleic acids. By providing sufficient anti-oxidants, it may be possible to modulate or even reverse the effects of aging at molecular level.

It is claimed that the composition described can be used to treat or ameliorate skin conditions including acne. The composition includes nutrients suitable as cofactors for enzymes, vitamins suitable for rapid cellular energy production, pH modifiers and buffer components plus an antibiotic, either erythromycin or gentamicin, and one or more anaesthetics, preferably lignocaine or lidocaine. The composition has a pH of 3.2 – 7.6 and an electrical potential of about -120 to about -20 mV and is incorporated into an emulsion suitable for topical application. The patent is very long and describes many diseases and claims but is worth studying for its detailed descriptions of skin problems, including acne, and how they may respond to the various ingredients of the composition.

Title: Non-comedogenic and non-acnegenic hair and scalp care formulations and method for use

US Patent: 9,949,915

Appl. No. 15/618,420

Patent abstracts 2017-18

1st published in SPC

John Woodruff

Date Granted: April 24, 2018

Assignee: Clarity Cosmetics Inc.

"Acne cosmetica" is a form of acne that is caused or exacerbated by certain cosmetic products, and typically results from a chemically-induced plugging of the hair follicles forming comedones.

Potentially comedogenic components include oils and waxes, PVP/DMAPA acrylates, cyclopentasiloxane, panthenol, dimethicone, some silicones Quaternium-70 and petrolatum. These ingredients may be comedogenic or may enhance the comedogenicity, irritation or allergic potential of other ingredients.

Claimed are hair and scalp treatment compositions that exclude comedogenic elements. The shampoo composition comprises guar hydroxypropyltrimonium chloride, phenoxyethanol, ethylhexylglycerin, sodium lauroyl methyl isethionate, cocamidopropylamine oxide, acrylate copolymer, C13-C15 alkanes, bisabolol, aminomethyl propanol and water. It may also include an anti-inflammatory agent, an anti-irritant agent, an anti-microbial agent, a sebum modulator, a keratolytic agent and mixtures thereof plus disodium EDTA, glycerin, citric acid, glycol distearate, and fragrance.

A second composition is formulated as a hair conditioner and comprises phenoxyethanol, citric acid, stearamidopropyl dimethylamine, cetearyl alcohol, behentrimonium chloride, cetyl palmitate, C13-C15 alkanes, shea butter cetyl esters, bisabolol and water and may contain disodium EDTA, polysorbate 80, glycerin, and fragrance. Quantitative formulations and methods of preparation are fully described and the patent lists many other materials that may lead to comedone formation.