

## Natural Ingredients

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John Woodruff

There appears to be no end to the love affair that the cosmetic industry has with natural, nature identical and naturally derived ingredients although this latter may be better termed as derived from natural sources. This feature will present some of the new materials that fall into these categories.

One trend that is very noticeable is the substitution of natural materials for petrochemicals. For example **Bionat Consult** suggests its Polyna R as a natural and safe alternative to petrolatum. It is an anhydrous lipid with a high melting point and similar texture and film-forming properties to petrolatum. It has been developed using olive oil and rice bran wax to form a mixture of *Olea europea* (olive) fruit oil, *Oryza* rice bran wax, stearic acid and *Olea europea* (olive) fruit oil glyceryl oleate.

**Cremer Care** promotes Cremerlin PURA made from a blend of natural triglycerides of pure olus oil with similar properties to petrolatum. Although traditionally petrolatum has been used in more heavy emulsions that are highly resistant and perceptible on the skin, Cremerlin PURA enables the production of light emulsions while maintaining the protection desired. Plantasens VP R15 from **Clariant International** is a mixture of *Ricinus communis* (Castor) seed oil, hydrogenated castor oil and *Copernicia cerifera* (Carnauba) wax offered as a vegetable alternative to petrolatum that can rapidly protect the skin from its daily exposure to the environment.

**Vertellus Performance Materials**, offers Castorlatum [INCI: *Ricinus communis* (Castor) seed oil, hydrogenated castor oil] that has the appearance and consistency very much like petrolatum. Even **Sonneborn**, known for its white oils and petrolatum, offers natural alternatives based on either meadowfoam seed oil {INCI: *Limnanthes alba*}, or olus oil. NOTE: Olus oil is a generic name for expressed oil of vegetable origin consisting primarily of triglycerides of fatty acids.

**Bionat Consult** supplies Polyte Extra as a substitute for lanolin and natural texturing agent and co-emulsifier. It can absorb 4-5 time its weight in water and shows improved organoleptic characteristics when compared to lanolin. It is used in

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formulations to give hydration, skin protection and film forming properties and to decrease trans-epidermis water loss. Its melting point, close to the skin temperature, and its high shine make it an ideal base for balms and make-up products. Its amphiphilic polymeric structure allows it to have good dispersing properties for pigments, mineral UV Filters and actives, claims **Bionat**. INCI: Butyrospermum parkii (shea) butter, olea europea (olive) fruit oil, Olea europea (olive) fruit oil glyceryl oleate, linoleic acid.

Another material from **Bionat Consult** is Polyssan OI offered as a substitute for squalene; avoiding the use of shark liver oil and hydrogenated vegetable oils.

According to Bionat its R&D team is continuously sourcing in the vegetable world to find alternatives to animal derivatives and hydrogenated products. Polyssan OI [INCI: Olea europea (olive) fruit oil, Olea europea (olive) fruit oil glyceryl oleate] was developed using olive oil and polyglyceride esters to supply an anhydrous lipid presenting the light texture, good spreadability and dry skin feeling characteristic of squalene. Sharing the same INCI listed ingredients Polyssan O is a silicone substitute presenting the light texture, high shine and dry skin feeling of light silicones. Because of its skin feel Hydrafeel-3 [INCI: Polyglyceryl-3 PCA] from **CR&D** is also presented as an alternative to silicones with natural moisturising properties.

**Northstar Lipids** extracts Crambe seed oil from the seeds of Crambe Abyssinica, principally by means of cold expeller pressing. Its high lubricity combined with a rich skin feel means that it can be used economically as a silicone oil replacement whilst still providing superior skin barrier function. **Northstar** also markets English Poppy Seed Oil [INCI: Papaver somniferum seed oil], which is obtained by careful cold pressing and light refining of poppy seeds giving rise to an oil of extremely high quality, freshness and stability optimised for cosmetic applications and in which essential nutrients such as vitamin E are preserved.

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*Butyrospermum parkii* (Shea) butter is a favourite natural ingredient and also the source of many derivatives with important properties. **AAK** produce Lipex SheaClear, described as a new liquid shea oil that is completely clear at 20°C. It is optimally processed to deliver clarity while maintaining a high level (6-8%) of functional unsaponifiables. The physical and sensory attributes of Lipex SheaClear make it an ideal ingredient for skin, hair and face oils where absolute clarity and low colour is desired, claims **AAK**. Due to its low melting point, it is also suitable for cold processed emulsions and it can advantageously be used in combination with **AAK**'s Lipex SheaLight [INCI: Shea butter ethyl esters] to create a wide range of sensory properties. By varying the ratio of these two emollients the formulator is able to adjust spreadability, absorption, cushion and the short and long term feel on skin and hair.

**Oléos** also utilises shea butter as the source of many of its naturally derived ingredients including three new shea esters to meet different formulation sensory requirements. Olvea Silky Shea [INCI: Shea butter ethyl esters] is a light-weight alternative to conventional shea butter, which imparts lightness and a velvety after-feel to skin and hair care formulations. It is rapidly absorbed into the skin, providing an instant moisturising effect and a radiant glow and this shea-based emollient is said to improve the overall texture and appearance of skin and hair.

Olvea Glossy Shea [INCI: Shea butter polyglyceryl-4 esters] is an effective moisturiser, which gives consistency to formulas and builds fine structure textures. It leaves a soft finish to skin and hair and it improves hair gloss and combability. Olvea Creamy Shea [INC: Shea butter glycerides] is a co-emulsifier which helps achieve the perfect cocoon texture for cosmetic products. This emollient with co-emulsifying properties increases the potential of other emulsifiers and improves the stability of emulsions while having excellent nourishing and revitalising properties. Olvea Creamy Shea with its unsaponifiable content softens and calms irritated skin and helps to protect and improve the skin condition.

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Also selected as the basis of many naturally derived ingredients is soy oil [INCI: Glycine max], well known for the different activities that its phyto-complex, especially characterised by isoflavones, is able to exert on skin. **Phenbiox** obtains soy stem cells that then undergo fermentation to force the stem cells to overproduce phyto-complex active molecules. The resultant Soy Cell [INCI: Glycine max (Soybean) callus culture] causes increased proliferation of dermal fibroblasts and improved synthesis of type I procollagen. Skin protection from UV induced photo-aging and free radical damage is improved and the depth of wrinkles is reduced.

A problem facing those who wish to be thought truly natural has been the sourcing of standard commodities, especially inexpensive ones that are pure chemicals. There is no chemical difference in pure glycerin, whatever its origin but glycerin obtained by the saponification of animal fats was avoided by many companies only to find their substitute source was palm oil.

**Cornelius** has sourced organic glycerin from India. It is produced from Karanja seeds that grow in semi-arid areas and Indian authorities are promoting the planting of these trees on environmental grounds. Each tree can produce between 25 and 40kg of fruits per year and fruits contain between 30 to 35% of oil, which comprises about 15% glycerin and the balance is free fatty acids. Karanja oil is a non-edible oil so it does not interfere with food crops and it has organic certification from the principle recognised certification bodies.

There are many suppliers of ethically sourced natural oils, butters and waxes. The **International Cosmetic Science Centre (ICSC)** of Denmark has a background in supplying edible oils for foodstuffs and claims all its materials are of food grade. It has a very extensive range of oils, butters and waxes to which it has just added Amla, curcumin and omega-3 enriched oils for use in Ayurvedic cosmetic applications. Also new this year are a number of exotic nutrient powders such as pomegranate, green tea,

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brahmi and boswellia extract and a selection of specially designed products for use in ethnic skin and hair care.

An exciting aspect of natural ingredients is the active principals that can be identified and extracted from them. At Formulate 2014 Tony Dweck of **Dweck Data** gave an insight into the chemistry of many of the plants extracts that had active claims. Dweck examined 219 fixed oils from nuts, seeds, fruits and cereals and identified their fatty acid profiles and related their constituents to their properties in medicine and cosmetics. Dweck also examined 230 essential oils and commented on natural preservatives and natural colours, astringents, thickening agents and exfoliating abrasives.

The major activities sought by cosmetic formulators are anti-inflammatory, antioxidant and free radical scavenging properties, skin whitening, promoting the skin's synthesis of collagen and elastin and anti-aging in general.

**Maruzen Pharmaceuticals Co. Ltd.** produce various active ingredients from natural plant extracts. Rose Myrtle Extract BG80 [INCI: Rhodomyrtus tomentosa fruit extract] is supplied in butylene glycol and contains two active ingredients: piceatannol, which has strong antioxidant properties, and piceatannol glycoside, which has anti-inflammatory and skin lightening properties. Rose Myrtle Extract BG80 is particularly recommended for preventing damage to DNA by exposure to solar radiation.

It appears that translucent skin as an indicator of skin beauty is highly regarded in Japan and Asian countries but its natural transparency is clouded by protein carbonylation, which also damages its water-holding capacity. **Maruzen Pharmaceuticals** claims that Silver Vine Extract BG3 [INCI: Actinidia polygama fruit extract] is a new anti-pollution concept with anti-carbonylation properties and capable of translucency enhancement.

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Constant exposure to environmental toxins leads to accumulated damage to DNA and to chronic inflammation. Both leading to premature signs of aging. **IBR**-Pristinizer is an aqueous extract of *Asteriscus graveolens* claimed to shield the skin and its cells against damage from pollution by reducing the expression of cell death related genes. A 28 day trail showed that IBR-Pristinizer delivered anti-aging effects including decreasing wrinkles around the eyes and mouth, improving skin texture and roughness and was perceived to improve skin tone, and radiance.

Iris ISO [Iris florentina extract] from **Silab** is described as a 3-in-1 product to protect the skin from environmental factors and its barrier function is strengthened, skin tone is preserved and wrinkles fade. **BioSpectrum** offers Red Snow as an antioxidant with anti-wrinkle properties. Red Snow is the name given to an extract of *Camellia japonica* gathered from an island off the coast of Korea with UNESCO World Heritage status.

The European equivalent of translucent skin is a healthy glow! **BASF Beauty Creations** has developed an active ingredient based on white blossoms that helps women achieve the brightness they want while maintaining healthy skin functions. Dermawhite contains extracts of *Saxifraga sarmentosa*, *Carica papaya* (Papaya) fruit and *Psidium guajava* (Guava) fruit and noticeably brightens the complexion by inhibiting melanin synthesis.

Lightening and brightening effects are also claimed for three new products from **Natural Solution of Korea**. BDS Perilla [INCI: *Perilla frutescens* sprout extract] contains rosmarinic acid that inhibits melanogenesis and also has anti-inflammatory and antioxidant properties. Gingerbright-F [INCI: *Sacchromyces/Kaempferia parviflora* rhizome ferment extract] inhibits tyrosinase and TRP-1 and TRP-2 expression so brightening and soothing skin. Scoti-Horsetail [INCI: *Equisetum fluviatile* extract] is an ingredient developed in association with the Royal Botanic

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Garden, Edinburgh, which contains protoapigenone that inhibits melanin synthesis and has an anti-inflammatory effect.

Bio-Dynamic Sprout (BDS) system is a special facility used by **Natural Solution** to cultivate plant sprouts. The environmental factors such as light and temperature are controlled to optimise cultivation conditions and the fresh sprouts are free from pesticides and pollution. Sprouts are believed to have a greater nutritive value than seeds and higher levels of plant actives. BDS-Memil is an extract of *Polygonum fagopyrum* or buckwheat sprouts with skin brightening effects.

**Synerga** has taken a slightly different approach to anti-aging. Its literature about Dolcévia 022014 suggests that we should enjoy, embrace and respect the things that come with age. It is a natural process and instead of fighting it we should be working to make it be the best it can be by the use of products able to return a healthy and natural complexion to skin. Everyday life often causes chronic stress and wrinkles; crow's feet and fine lines are some of the physical results of skin hypertension and suffering. In order to overcome daily stress, the skin needs to recover itself and find a way to get rid of abnormal tension. This is could do with the aid of Dolcévia.

Dolcévia is an ingredient extracted from leaves of *Stevia rebaudiana* by **Synerga**. It yields a pure stevioside for cosmetic and dermo-cosmetic use with a proved de-contracting effect on involuntary muscle tension. It does this by enhancing the presence of the acetylcholinesterase enzyme, which is responsible for deactivating the nervous signal that causes muscles to contract. By this means it minimises stress-induced involuntary muscle contractions that lead to the formation of age signs and skin becomes smoother, better hydrated and more evenly toned.

Stress is a causative factor for a new type of sensitive skin discovered by **Maruzen Pharmaceuticals** that it has named Yuragi hada. Other factors are environmental conditions and changes in diet or physical condition. **Maruzen** suggests that dipotassium glycyrrhizinate with its well-documented anti-inflammatory properties

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can soothe skin suffering from Yuragi hada. As with all Maruzen ingredients there is extensive documentation available to explain the cause of skin problems and the effect that its ingredients have on alleviating them.

Glycyrrhetic acid is the active principal of Glycerrate from **Prolabin and Tefarm** that is supplied in a clay matrix for slow release. It is recommended for reducing skin damage caused by free radicals and to prevent problems associated with photoaging. Photoaging is a major cause of perceptible skin aging and the focus for many cosmetic ingredients. Elix-IR from **Lucas Meyer** is an extract of knotgrass, *Polygonum aviculare*, which is rich in flavonoids that protect elastic fibres of the papillary and reticular dermis from sun damage. It prevents premature aging after repeated sun exposure, increases skin firmness and reduces the appearance of wrinkles.

The eye area is often the first to show signs of age so has attracted much attention from cosmetic ingredients suppliers. At In-Cosmetics 2015 **Naolys** launched a new 100% pure active plant cell complex that it called Initial E [INCI: *Polianthes tuberosa* callus extract] that combines tuberose cells and betaine that work in synergy to provide comprehensive action on the three major changes that occur in the area around the eyes: dark circles, puffiness and wrinkles.

Eyedeline from **Lipotec's** marine technology division, **Biointec**, is a plankton extract claimed to act on the three main evidences of tiredness and aging around the eyes. By improving microcirculation and reinforcing the cellular matrix it is claimed to rejuvenate the delicate skin and enhance the appearance of the eye contour area, reducing dark circles, decreasing eye bags and improving collagen synthesis.

Active ingredients from natural sources tend to focus on skin care but an innovative active ingredient for hair care is Akosky Azuki from **Akott**. This material is derived from mung bean and red clover, [*Vigna radiate* sprout extract and *Trifolium pratense* sprout extract], and offers a new way of treating hair loss. The primary function of Alosky Azuki is to stimulate positive growth factors and genetic messages throughout



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the lifecycle of the hair. Many hair loss products are targeted at extending the anagen phase but although this will slow hair loss in the short term it may lead to a damaged hair cycle in which the catagen and telogen phases are then unable to complete properly. Akosky Azuki helps improve the lifespan of the anagen phase but it also ensures that the catagen and telogen phase complete their cycle in order to produce healthy and thicker looking hair.

NOTE: The majority of the ingredients mentioned comply with Ecocert and/or COSMOS standards for organic or natural materials. INCI lists as given generally only show the principal ingredients and all interested are advised to seek full information from the material suppliers.

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**[www.creative-developments.co.uk](http://www.creative-developments.co.uk)**