

Innovatory concepts reviewed

The supply of raw materials continues to involve an exciting array of new offerings – many of them based on natural sources, new evaluation techniques and good solid chemistry.

Notable is how skin cell science is being employed, and to the fore are sophisticated *in vitro* and other analytical techniques.

The review that follows is a personal excursion through the raw materials that have been highlighted by formulators and raw material suppliers throughout in the past year. Some, apparently familiar, materials have been relaunched with additional functions or claims.

Skin problems

There are many facets to skin care and there is much focus on the reduction of wrinkles, and the protection of the skin and its cellular structure. Identified here is a selection of marketing platforms to describe these materials.

Anti-ageing

The number of anti-ageing raw materials can be quite daunting and often the source and potential marketing story provide the final answers to a decision about what should be chosen.

Antarcticine from Lipotec is derived from a new type of bacteria found at the bottom of a glazier at Inset Admiralty Bay (King George Island, South Shetland Island, Antarctica). It increases collagen production that leads to a healthier and younger-looking skin, with reduced wrinkles and lines. It was also found to increase elastin formation to give a more vital and elastic skin. Furthermore, it reduces damage caused by cold weather, it increases hydration and moisture in the skin, and it improves skin healing. INCI name: Aqua, *Pseudoalteromonas* ferment extract.

Retinol Molecular Film Fluid, also from Lipotec, is a delivery system specially designed for retinol that ensures stabilisation of the molecule without oxidation and enhances the cutaneous absorption of vitamin A through the

epidermis. It was shown to improve the growth of skin cells, ensure the maintenance and function of skin and to help prevent premature ageing. The incorporation of retinol into the molecular film delivery system ensures complete stabilisation without oxidation of the retinol molecule.

Exo-H from Unipex Innovations is another fascinating natural source but in this case it is from the shallow salt waters of the Moorea Lagoon in French Polynesia. Found in these waters is an accumulation of organic matter of microbial origin that forms mats called “Kopara” in the native Polynesian language.

The microbial mats are rich in exopolysaccharides (EPS) that have been secreted by cells within the biofilm. Two microorganisms producing EPS were isolated: *Vibrio alginolyticus* and *Alteromonas macleodi*. These sophisticated natural actives are well-defined exotic polysaccharides obtained from Kopara living in unique ecosystems in French Polynesia. They are naturally rich in essential minerals that can protect the beauty of skin. Exo-H helps maintain an optimal skin barrier function and has excellent hydrating properties. INCI: Water (and) butylene glycol (and) *Alteromonas exopolysaccharide* extract.

Exo-T, also from Unipex Innovations, is a potent inducer of desquamation and differentiation markers for better skin regeneration. Improved hydration and skin texture is achieved for a complete restructuring effect leading to a smooth, radiant and natural skin complexion. INCI name: Water (and) butylene glycol (and) *Vibrio exopolysaccharide* extract.

Antioxidant skin protection

Aldenine from Lipotec is one of the growing choices of polypeptide. Aldenine contains two polypeptides: a vegetal protein hydrolysate and a synthetic tripeptide (GHK). The tripeptide acts as molecular scavenger, capturing a specific type of toxic radical called Reactive Carbonyl Species (RCS), while the vegetal protein boosts collagen III production in



Coconut.

skin cells. GHK captures noxious RCS which skin cells cannot detoxify by themselves. The plant protein hydrolysate selectively boosts synthesis of collagen III, which is the type found in young skin. It can protect keratinocytes from UVB photodamage by eliminating RCS and protects skin cells from UVA-induced DNA damage, thus preventing photoageing. INCI name: Water (aqua), hydrolysed soy protein, hydrolysed wheat protein, xanthan gum, tripeptide-1, phenoxyethanol, methylparaben, ethylparaben, propylparaben, butylparaben, isobutylparaben

Lipochroman-6 from Lipotec is a remarkable molecule that can capture both nitrogen and oxygen radicals. In addition to this dual activity and is one of the most potent oxygen radical scavengers. It has been recently submitted to a comet assay. The results have shown that the active has an internal photoprotection capacity against UVA radiation with a dose-response relationship, due to its capacity to inhibit ROS production. Furthermore, the capacity of Lipochroman-6 to reduce the levels of intracellular ROS was evaluated, in a dose-dependent manner, in human neuroblastoma cells exposed to oxidative stress induced with H₂O₂. The results showed the prolonged up-regulation of the survival pathways of cells. INCI name: Dimethylmethoxy chromanol.

Anti-wrinkle

Leuphasyl from Lipotec reduces the depth of wrinkles on the face especially in the forehead and around the eyes. It has a synergistic effect to complement the action of Argireline. Leuphasyl can be incorporated in cosmetic formulations such as emulsions, gels, sera, etc, when removal of the deep lines or wrinkles in the forehead or around the eye area is desired. INCI Name: Water (aqua), glycerin, pentapeptide-18, caprylyl glycol.

Argireline from Lipotec is a unique new peptide that both reduces the degree of existing facial wrinkles and has been demonstrated effective against their development. It has been shown to inhibit the formation of the SNARE complex as well as catecholamine release. These inhibitions confer anti-ageing activity on Argireline – they closely relate to the basic biochemical mechanisms of wrinkle formation. INCI: Water, acetyl hexapeptide-3.

Skin elasticity

Decorinyl from Lipotec is a synthesised tetrapeptide which mimics the sequences of decorin that bind to collagen fibrils. It has been shown to regulate fibrillogenesis and control fibril growth, improving firmness and elasticity of the skin, ensuring uniformity of fibril diameter and spacing of collagen fibrils. In effect, it replaces the non-functional decorin encountered as the skin ages, and also sustains a superior moisture profile. Decorinyl has been incorporated into a liposomal system for enhanced penetration, stability and efficacy. It may be used in emulsions, gels and other formulations. INCI Name: Water (aqua), lecithin, tripeptide-10 citrulline, carbomer, triethanolamine, phenoxyethanol, caprylyl glycol.

Skin anti-ageing

Cococin from Sabinisa is the freeze-dried form of coconut water. The ratio of RNA-phosphorus to DNA-phosphorus is significantly lower in the liquid endosperm of mature coconuts as compared to that of green coconuts. RNA plays an important role in amino acid transport and respiratory metabolism in living cells. The coconut water used to make Cococin is obtained from green coconuts at the optimal stage of maturity, to ensure a high content of RNA and growth factors, including shikimic acid, quinic acid and indole-3-acetic acid, along with essential vitamins, amino acids, and minerals. Cococin can effectively be used for oral and topical applications and serves as a natural pool of nutrients and growth factors that support healthy ageing.

Pomella Pomegranate Extract from

Verdure Sciences is notable – a new study indicates a pomegranate extract standardised to punicalagins may help promote healthy, young-looking skin.

Skin firming

Serilesine from Lipotec improves cell adhesion by enhancing synthesis of Laminin V and Integrin Alpha 6. Adhesion of cells to the basement membrane and among themselves provides firmness to the skin. The increased contact between skin cells ensures correct nourishment and health. It is also believed to favour microcirculation. INCI name: Water (aqua), hexapeptide-10.

Chronodyn from Sederma provides the skin with the ability to assure its regenerative functions by stimulating the essential elements for its metabolism. After one month's treatment, the skin is 3 times firmer and 4 times more toned compared to placebo. The skin fatigue decreases, and the skin is stronger. INCI name: *Euglena gracilis* extract, glycerin.

Dynalift from Sederma tightens and smoothes the skin. The numerous hydroxyl functional groups (–OH) of the polyosides interact with each other and with the keratin of corneocytes to form a tightening film on the skin surface. The attractive force of each bond creates a tension that produces a micro-lifting effect on the skin. INCI name: Water (aqua), sodium polystyrene sulfonate, sorghum bicolor stalk juice, glycerin.

Detoxifying

Cayoma Grapefruit from Qenax AG deserves attention. Grapefruit contains bioflavonoids such as naringenin, hesperidin and narirutin which have detoxifying properties. It is an alcoholic/aqueous extract from fruit and seeds of *Citrus paradisi*, and it contains more than 10% bioflavonoids (measured as hesperidin). Xenobiotic detoxifying reaction is measured on human keratinocytes.



Pomegranate.

Skin anti-inflammatory and antioxidant

VitaGranate Pomegranate Powder from FutureCeuticals: the effects of pomegranate are due to its combined anti-inflammatory and anti-oxidative potency.

Skin anti-irritant and brightener

Defensil from Rahn offers protection for sensitive and demanding skin and protects against irritations of the skin. It acts to inhibit inflammation. INCI name: Octyldoecanol, *Cardiospermum halicacabum*, *Echium plantagineum*, *Helianthus annuus*.

Cotton Bloom IS from ISP Vincience is an oligosaccharide designed to improve skin barrier function and the appearance of irritated skin. In a dry skin, the *stratum corneum* (SC) is thicker than in a normal skin. The SC thickness can be measured from pictures obtained with a VivaScope and specific analysis software. The results show the *stratum corneum* appearing "bright" and its thickness can be measured. The results showed a statistically significant decrease of the thickness of the horny layer and a decrease of the size of the granular cells. All these parameters demonstrate that cotton bloom has a significant rapid moisturising effect on the skin. On further investigation it was found to improve dry hair appearance and stimulate keratin synthesis. INCI Name: Water (and) glycerin (and) *Gossypium herbaceum* (cotton) extract.

Hydration protection

Kendi Oil from Soliance is a certified organic oil (ECOCERT standard) obtained from an Indonesian tree, *Aleurites moluccana*. Kendi Oil, extracted from the kernels using a cold pressure process, is rich in omega 3 and γ -tocopherol. INCI name: *Aleurites moluccana* seed oil.

Nesatol from Vevy is a suitable and safe oil for skin products and is said to match and exceed the properties of vegetable and mineral oils. It is an excellent emollient, lubricant, and a stable, absolutely non-acanthogenic, non-comedogenic, non-pilogenic ingredient. It is described as the only synthetic polytriglyceride which reproduces the typical characteristics of natural oils but eliminates unsaturated bonds. This fact, the absence of short chain fatty acids, the appropriate proportions between the various long chain fatty acids, and the balanced presence of saturated isomers make Nesatol a preferred oil for cutaneous uses. INCI name: C10-C18 Triglycerides.

Moisturiser

Ion-Moist 4Men from Lipotec is a molecular film, specifically formulated for men, that provides natural hydration due

to its NMF ingredient content (amino acids, sugars, lactate, urea, PCA and several ions). Ion-Moist 4Men restores the levels of moisture after shaving and preserves the natural barrier function of the epidermis. It stimulates moisture retention in the *stratum corneum* and enhances smoothness of the skin. Men tend to have more collagen than women, but less hydration. This unique ingredient can be used in O/W emulsions, body milks, sera, aftershave gels and other preparations. INCI Name: Water (aqua), glycerin, calcium pantothenate, xanthan gum, urea, caprylyl glycol, magnesium chloride, potassium chloride, potassium lactate, magnesium lactate, sodium citrate, glucose, citric acid, ethylhexylglycerin.

Skin moisturising and softening

Irwinol LS 9319 from Laboratoires Sérobiologiques is a botanical butter, extracted from the edible fruit of an exotic tree, *Irvingia gabonensis*, which is called “wild mango”. It contains mainly triglycerides of myristic acid (40-59%) and lauric acid (35-52%), with a minor unsaponifiable fraction containing mainly sterols and tocopherol. It exhibits a moisturising efficacy and protects and repairs skin and lips through its film-forming activity, thereby restoring softness, suppleness and smoothness. A clinical test has shown that it is a better skin moisturiser than shea butter. INCI name: Octyldodecanol (and) *Irvingia gabonensis* kernel butter (and) hydrogenated coco-glycerides.

Skin protection

With **Vitaderm** from Rahn, the active ingredients from the holly have an antioxidant effect, leaving a protective, conditioning film on the skin. Ursolic acid is one of the most well-known and effective elastase and collagenase inhibitors. Hydrolysed rice proteins supply the skin with essential amino acids, making it fit and supple. INCI name: Alcohol, water, glycerin, hydrolysed rice protein, *Ilex aquifolium* (holly) leaf extract, sodium ursolate, sodium oleanolate.

Phycojuvenine from Codif rejuvenates and protects “adult stem cells” in the dermis by prolonging tissue youth and respecting skin ethics. Phycojuvenine is extracted from the brown seaweed *Laminaria digitata*, also called or seaweed, or “fouet des sorcières” in France and “Kombu” in Japan. Phycojuvenine acts on adult stem cells in the dermis in three steps. It restores ageing adult stem cells of the dermis with their capacity for division, thereby stimulating their action. It protects adult stem cells from ageing by preserving and prolonging their efficacy. It rejuvenates



Grapefruit.

fibroblasts, stimulates collagen synthesis in mature skin and erases wrinkles. INCI name for Phycojuvenine G: Glycerin (and) water (and) *Laminaria digitata* extract.

EpiCalmin TCM from Mibelle is a synergic combination of three plants used in traditional Chinese medicine (TCM). TCM is holistic and thus looks at the organism as a whole. With TCM, the belief is that skin disorders reflect changes in overall health. The three different plants were selected according to their strong soothing activity long known in TCM. The mechanism of activity for this specific plant combination was demonstrated by gene array analysis and its efficacy was proved by *in vivo* studies. Results showed that it effectively reinforces the skin's self-protection against dehydration, oxidative stress and also degradation of the extracellular matrix. Thus EpiCalmin TCM, which is ECOCERT approved, actively protects the skin and prevents premature ageing. INCI name: *Lonicera japonica* flower extract/*Lonicera japonica* (honeysuckle) flower extract (and) xanthium sibiricum fruit extract (and) *Cyperus rotundus* root extract (and) sodium benzoate (and) aqua/water.

Uniprotect PT-3 from Induchem reduces UV-induced protein oxidation by more than 70% and reduces UV-induced erythema by more than 30%. It protects protein repairing enzymes that are down-regulated by UV. It works in both pre- and post-treatments. INCI name: Panthenyl triacetate, ethyl linoleate, oleyl alcohol, tocopherol.

ACS-AntiCytoStressor from Vevy is a new active ingredient and is described as an antagonist of the skin stress hormones formation. It is used in three local treatments: anti-ageing, reconstitutive-reparative and for its protective and preventive properties. The injured epidermis produces stress-hormones autonomously, and ACS-AntiCytoStressor modulates this activity. It is a skin anti-inflammatory, is anti-ageing and is a free radical scavenger with keratoplastic activity suitable for the treatment of dyskeratosis.

Cayoma Olive from Qenax AG is a standardised extract from olive fruit and olive leaves with a high content of active ingredients. Main component is the bitter secoiridoid glycoside oleuropein, which is typical for *Oleaceae*. The new olive derivative showed a high protection level against oxidative stress at all chosen concentrations before and after irradiation. The result after irradiation showed a significant increase up to 96% protection level. The tests with Cayoma Olive have shown that, due to its extremely significant effect against oxidative stress, epidermal cells are well protected against changes. Thus, claims like DNA repair, UV protection from the inside as well as anti-ageing through the constant proliferation of fibroblasts are possible. Cayoma Olive inhibits the age-related increase of membrane lipids oxidation. INCI name: Aqua, *Olea europaea* leaf extract, alcohol denat. maltodextrin, *Olea europaea* extract.

Skin regeneration

Phycosaccharide AI from Codif belongs to a generation of high-tech active cosmetic substances derived from marine biotechnology. It is produced by controlled enzymatic depolymerisation with a marine enzyme of membrane polysaccharides obtained from the brown seaweed *Laminaria digitata*. It optimises the division capacities of epidermal stem cells and promotes the regeneration of epidermal tissue. INCI name: Phycosaccharide AIG: glycerin (and) water (and) hydrolysed algin.

Skin repair

Unirepair T-43 from Induchem is proven to accelerate CPD removal in a UVB irradiated skin model. It contains innovative ingredients which protect and help to treat environmental aggression such as UV radiation, one of the biggest causes of photoageing. The incorporation of Unirepair T-43 is strongly advised for daily and also night treatment products to help the natural skin repair mechanism. Since this mechanism slows down with ageing, Unirepair T-43 is particularly indicated in anti-ageing compositions and in products for aged customers where acceleration in the skin repair mechanism is needed in order to restore the normal repairing time. INCI name: Butylene glycol, acetyl tyrosine, proline, hydrolysed vegetable protein, adenosine triphosphate.

Dermaxyl from Sederma is anti-ageing, wrinkle smoothing and offers cutaneous barrier repair capability. It stimulates cell communication and then repairs age-related skin damage. INCI name: C12-15 alkyl benzoate, tribehenin, ceramide 2, PEG 10 rapeseed sterol, palmitoyl oligopeptide.

Skin smoothing

Trylagen from Lipotec selectively boosts the synthesis of collagen I, III and IV. It controls uniformity of fibril diameter and the regular spacing of collagen fibrils when the fibrils are formed, ensuring the correct organisation of the collagen network. It protects collagen from degradation and glycation – characteristic of aged skin. Trylagen helps maintain collagen quantity and quality and this is macroscopically translated in a significant anti-wrinkle effect. INCI Name: Water (aqua), *Pseudoalteromonas* ferment extract, hydrolysed wheat protein, hydrolysed soy protein, tripeptide-10 citrulline, tripeptide-1, lecithin, xanthan gum, carbomer, triethanolamine, phenoxyethanol, butylene glycol, caprylyl glycol.

Laminixyl IS from ISP Vincience allows an increase of dermal papillae and the improvement of their shape, suggesting an improvement of the papillary index. There was a reformation of the interdigitation between the dermis papillae, a better tonicity and smoothing of skin (microrelief less apparent). All these elements suggested a regenerating and renewal effect of Laminixyl IS with probably an improvement of the nutrition of the basal cells. It is a synthetic heptapeptide designed to mimic the action of laminin-5, a molecule present in the basement membranes of the skin. Laminixyl IS promotes the synthesis of extracellular matrix proteins such as collagen I and III and fibronectin. In addition, *ex vivo* tests illustrated an increase in synthesis of keratin – a protein that is involved in the barrier function of the skin. INCI: Water (and) butylene glycol (and) heptapeptide.

Pulpactyl from Silab is extracted from Southernwood (*Artemisia abrotanum*) that can stimulate adipogenesis, favour the synthesis and storage of triglycerides, and provide a cosmetic “lipofilling”. INCI name: *Artemisia abrotanum* extract.

NanoCacao from Mibelle is a lipophilic fraction of cocoa beans encapsulated in a nano-emulsion. Cocoa beans contain several “feel-good” chemicals including anandamide, a lipophilic substance which is also naturally produced in our brain. This neurotransmitter induces euphoria, regulates appetite and relaxes muscles. Anandamide binds to the cannabinoid receptors which are also present on certain skin cells. In a co-culture model of nerve cells with muscle fibres, NanoCacao was shown to relax muscle contractions. *In vivo*, NanoCacao improved the smoothness of the skin’s micro-relief. Thus NanoCacao can relax and smooth the skin leading to an improvement of the complexion. The product is available in 2 versions: NanoCacao: cocoa bean lipophilic fraction



Cocoa pods.

encapsulated in a nano-emulsion (water-soluble) and NanoCacao O: cocoa bean lipophilic fraction (oil-soluble). INCI name: *Theobroma cacao* extract/*Theobroma cacao* (cocoa) extract (and) tocopherol (and) caprylic/capric triglyceride.

Stretch marks

Vanistryl from Lipotec inhibits human MMPs activity and protects the connective tissue from degradation. It boosts collagen elastin and has a wound healing effect. It can be incorporated in cosmetic formulations such as emulsions, creams and gels where attenuation of stretch marks is desired. INCI Name: Water (aqua), caprylyl/capryl glucoside, lecithin, glycerin, *Pseudoalteromonas* ferment extract, acetyl tetrapeptide-10 (proposed), pentapeptide-18, xanthan gum, potassium sorbate, caprylyl glycol.

Regu-Stretch from Pentapharm is a water-soluble complex that protects the skin during any mechanical stretching. Skin inflammation is reduced by applying the ingredient before stretching. The unique solution protects skin structure (extra cellular matrix) from tissue degradation. The peptide and panthenol stimulate the repairing of stretch marks by stimulating the synthesis of collagen. Panthenol helps to keep the skin moist and supple. INCI name: Panthenol, *Marrubium vulgare* extract, palmitoyl tripeptide-5, water, glycerin.

Pimples and spots

Epicutin-TT from CLR reduces pimples and comedones. It also reduces sebum formation and has controlled release of tea tree oil due to encapsulation which protects tea tree oil from oxidation. Even low concentrations of tea tree oil are effective. INCI name: Cyclodextrin (and) *Melaleuca alternifolia* (tea tree) leaf oil.

With **Seboclear** from Rahn, the active components are harmonised to suit one another, and to support the desire for skin clear of pimples and blackheads. It is an effective gentle treatment for comedones

and pustules. INCI name: Water, alcohol denat., sodium salicylate, *Plantago lanceolata* leaf extract, *Berberis aquifolium* extract.

Contour products

There is a large demand for products that modify the profile of various parts of the body, such as the buttocks, breasts, thighs and stomach.

Breast firming

CellActive-FORM from Rahn is a natural complex of active ingredients that was specifically developed and tested for application in the breast and cleavage area. Its active principle is based on the synergistic action of its ingredients: mangosteen, quince-hydrogel and the essential cell boost factor. The active ingredient combination of CellActive-FORM supports the natural process of lipid accumulation (volume effect) thus accentuating the feminine form. CellActive-FORM’s structural component achieves an immediate physical effect by generating a hydrogel-polymer-network which stabilises, smoothes and firms the outer skin. The additional regenerating, moisturising and protective properties smoothes the surface profile of the skin. INCI name: Water, alcohol denat., *Garcinia mangostana* peel extract, *Chlorella vulgaris*/Lupinus albus protein ferment, *Pyrus cydonia* seed extract.

Throat and chin slimming effect

Hydrofiltrat Menyanthes G from Codif has a firming effect with strong antioxidant capacities that protects vitamin C, and improves collagen synthesis. It firms the skin and improves the oval of the face (double chin reduction). It has synergetic effect with vitamin C derived ingredients. INCI: Glycerine (and) water (and) *Menyanthes trifoliata* extract.

Buttock and thigh slimming effect

Hydrofiltrat Marine Lotus G from Codif is an extract that has strong antioxidant capacities, restores the activity of lipolytic molecules, boosts caffeine efficacy, inhibits PGE2 and therefore the supplying of fats to adipocytes, and stimulates adiponectin synthesis. This gives a reduction in the volume of the thighs and buttocks, as well as erases the orange peel effect. It is preservative free and ECOCERT approved. INCI name: Glycerine (and) water (and) *Lotus maritimus* extract.

Cellulite

Liporeductyl from Lipotec is a pro-liposome manufactured as a multi-extrusion composite of classical anticellulite extracts combined with the

synergistic effect of a GHK tripeptide. The pro-liposomal formula ensures formation of liposomes once blended into the final preparation. Submicrodispersions are responsible for the homogenous mixture of the actives, and achieve a particle size which favours formation of special liposomes. These special liposomes ensure effective penetration, so transport of the actives to the deepest layers of the epidermis allows effective action on both the lipolytic and venotonic fronts. It contains the following actives: water, glycerin, lecithin, caffeine, Butcherbroom (*Ruscus aculeatus*) extract, TEA-hydroiodide, ivy (*Hedera helix*) extract, carnitine, escin, tripeptide-3, xanthan gum, carrageenan (*Chondrus crispus*).

Iodotrat from Vevy is a low molecular weight organic iodine (thus non-proteic) for body contour treatment (cosmetic cellulitis). It does not release free iodine. It is very stable and non-irritating, improves skin trophism and reduces fat deposits. Several imitations of the reaction which produces iodine amine exist. Iodotrat is not the simple result of that reaction but the end result of a specific procedure for the stabilisation of iodine and its capacity to be modified by membrane receptors (Beta-receptors of mastcells). INCI name: Hydroiodide TEA.

Timiline from Greentech allows for a significant decrease in the hyperplasia and hypertrophy of adipose tissues via a direct and localised action at the level of the adipocyte itself. A transcriptomic study using DNA microarray analysis, demonstrated that it locally induces an over-expression of the gene FIAF and the protein adipokine, with which it is associated at the level of the adipocyte. Timiline decreases lipid storage in adipocytes and fights against cellulite. It also reduces the dimples or orange peel effect seen in this condition and improves drainage in these problem areas. INCI name: *Agrobacterium*-fermented polysaccharide.

Perfeline from Rahn actively supports



Tea tree.

the decrease of orange skin in the problem zone. Caffeine stimulates fat cleavage, vitamin BT (L-carnitine) facilitates the introduction of free fatty acids into the mitochondria and ruscogenin contained in the Butcher's Broom (*Ruscus aculeatus*) extract disposes of metabolic waste from the cell. Ruscogenin also has anti-inflammatory properties, and strengthens and tightens the tissue due to its anti-elastase activity. INCI name: Aqua, carnitine, caffeine, *Ruscus aculeatus* extract.

Skin lightening and hyperpigmentation

Chromabright is a new brightening active from Lipotec, and it can be used when there is an abnormal accumulation of melanin – responsible for hyperpigmentation. Chromabright acts by inhibiting tyrosinase activity. It fulfils all the desirable qualities for a new skin brightener: it exhibits a considerable lightening *in vivo* effect on the skin, has a completely safe profile, shows good stability in formulations and possesses a photoprotective effect on human epidermal keratinocytes, helping to prevent skin damage caused by UV radiation. It contains dimethylmethoxy chroman palmitate.

Lumiskin from Sederma is for skin lightening (and age spot or liver spot reduction). Diacetyl boldine (DAB) works via α -adrenergic antagonist receptors and calcium flow regulation. Tyrosinase is not directly inhibited by competition, but is stabilised in its inactive form. INCI name: Caprylic/capric triglyceride, diacetyl boldin.

Specialist lip treatments

Lip plumper

Hilurlip from Lipotec redefines, plumps and minimises fine vertical lines of the lips. Small particles of sodium hyaluronate are processed to enhance penetration and efficacy, producing a long-term volume-boosting effect on the lips and an anti-ageing action on the thin tissue. It also acts against the effects of outside pollution. Hilurlip can be incorporated into water-free lip care formulations, including glosses and balms (not recommended for lipsticks). It is also oil soluble. INCI name: Isohexadecane, BIS-PEG/PPG-14/14 dimethicone, ethylene/propylene/styrene copolymer, butylene/ethylene/styrene copolymer, cyclopentasiloxane, sodium hyaluronate, xanthan gum, tripeptide-1.

Wrinkle plumping

Plumping NanoVectors from Active Concepts is a sophisticated delivery system which allows the nanovectors to be deposited into the skin to be used for a plumping effect. Plumping NanoVectors

use this technology by taking advantage of the anionic, or negatively charged, properties of the skin. This will attract the cations, or positively charged particles, in the excess water, causing an osmotic reaction and therefore a swelling of the nanovector and a decrease in the appearance of wrinkles. This effect can be used on skin and also for lips.

Treatment of ocular conditions

Eye – puffiness and bags

Eyeseryl from Lipotec is an acetyl tetrapeptide with anti-oedema properties and a proven efficacy in reducing puffy eyebags. It also enhances skin elasticity, skin smoothness and shows a decongesting effect. It can be used where a reduction of puffiness under the eye is desired. INCI name: Water (aqua), acetyl tetrapeptide-5.

Eyes – dark circles

Haloxyl from Sederma lessens under eye dark circles. Pal-GHK and Pal-GQPR reinforce firmness and tone of the eye area. Chrysin and N-hydroxysuccinimide activate the elimination of blood originated pigments responsible for dark circle colour and local inflammation. Infra-orbital shadows are due to the accumulation of haemoglobin and its coloured degradation products (biliverdin, bilirubin and iron) in the dermis and epidermis. Chrysin stimulates the enzyme (UGT1A1) leading to the clearance of bilirubin. N-hydroxysuccinimide makes the iron soluble for elimination. INCI name: Water (aqua), glycerin, steareth-20, N-hydroxysuccinimide, chrysin, palmitoyl oligopeptide, palmitoyl tetrapeptide-7.

Treatment of hair conditions

Hair retardant

Decelerin from Lipotec is a mixture of active ingredients offering a complete post-shaving treatment. It targets its action in hair follicle cells and weakens new hair formation. Decelerine has been proven to inhibit hair growth and decrease the length and density of unwanted hair, thus reducing the frequency of shaving and depilation. It also provides a soothing, moisturising and anti-inflammatory effect on the skin. It may be used in any formulation for post-depilatory treatments such as emulsions, body milks or after shave lotions. INCI name: Water (aqua), glycerin, Barbados aloe (*Aloe barbadensis*) leaf extract, *Lauryl isoquinolinium* bromide, *Pseudoalteromonas* ferment extract, polyquaternium-37, disodium EDTA, isopropyl alcohol, sodium sorbate, sodium benzoate, allantoin, glucose, caprylyl glycol.

Hair strength and moisture

Vecorexin from Lipotec is a liposomal system designed to deliver actives into the hair fibre. It can encapsulate a range of actives for applications such as moisturising, fortifying, restructuring, hair growth and antioxidant action. As it penetrates the inner layer, it moisturises, protects and strengthens hair texture. Encapsulated actives may include keratin, silk protein, vitamin combinations and many others. INCI name: Water (aqua), lecithin, linoleamidopropyl PG-dimonium chloride phosphate, propylene glycol, carrageenan (*Chondrus crispus*), acrylates C10-30 alkyl acrylate crosspolymer, triethanolamine, disodium EDTA.

New natural materials

The market is always interested in new botanicals and there have been some interesting launches.

Australian extracts

A new range through Cosmetochem has been long-awaited as a new source of ethnobotanical extracts:

- **Kakadu Plum** (*Terminalia ferdinandiana*). It has the Aboriginal names of Marunga or Gubinge. It is a small green fruit, high in vitamin C and antioxidants and is used as an energy source and to quench thirst.
- **Desert Lime** (*Citrus glauca*). This is native to Queensland and New South Wales and is a small, green/yellow, knobby fruit with a strong citrus flavour. It is a good source of antioxidants and fruit acids.
- **Lemon Myrtle** (*Backhousia citriodora*). This is native to sub-tropical and tropical rainforest areas and has a unique fragrance of lemon, lime, and lemon grass. It is used by Aboriginal people as a tonic and aphrodisiac. It shows antimicrobial and antiseptic effects and is a central nervous system relaxant.
- **Australian Bush Mint** (*Prostanthera rotundifolia*). This is a plant rich in essential oils and is used in infusions to relieve headaches and colds. It has an intense fragrance and has antifungal and antibacterial properties.
- **Anisata** (*Backhousia anisata*). This is a native of East coast sub-tropical rainforests and the leaves have antibacterial and antifungal properties. It is used for its tonic and stimulant properties and has a similar but sweeter aroma than aniseed. It is used as an antiseptic.
- **Mountain Pepper** (*Tasmannia lanceolata*). This plant is native to the cool, moist elevated areas in S.E. Australia and has leaves that are



Bush tomato.

aromatic dark green and shiny. The fruit (called Pepperberry) are pea-sized purple-black berries and have a hot taste. They are used in treating aches and pains, and also for their antimicrobial effect.

- **Desert Raisin** (*Solanum centrale*). The Bush Tomato is native to Central Australia and is dried as a food source. The Aboriginal names are Akatjera (Arrente), Kampurarra (Pitjantjatjara), and Kati Kati (Anangu Uluru). The fruit is a brown and raisin-like with an earthy tomato/caramel flavour.
- **Quandong** (*Santalum acuminatum*). It has the Aboriginal name of Goorti (or Narungga). It is widespread in the arid and semi-arid areas of S. Australia. The fruit is a red / yellow and is high in vitamin C and fruit acids, The kernel oil used by indigenous people for care of the hair and skin.

Natural oils

The range of citrus fruit seed oils from Seatons (Croda) is carefully derived from the seeds of grapefruits, oranges, limes and lemons.

- **Grapefruit Seed Oil** is pale-yellow, and much like olive oil in flavour. It can be used in similar ways to olive oil in cosmetics and nutritional products. The refined oil is high in palmitic acid (20-33%), oleic acid (20-30%) and linoleic acid (35-45%).
- **Orange Seed Oil** is extracted from the seeds of oranges and further refined to yield an amber oil. The crude oil bears the sweet smell of oranges and is high in palmitic acid (14-21%), oleic acid (28-35%) and linoleic acid (35-43%).
- **Lime Seed Oil** (*Citrus aurantifolia*) is obtained from the fruit processing industry as a by-product. The lime originates in India but is now grown worldwide. The oil is rich in essential fatty acids with 70% of the lipid profile being made up of the key omega 3, 6 and 9 fatty acids. In addition, the oil comprises around 20% palmitic acid.

This is one of the reasons for the oil's waxy consistency at low temperatures but, more importantly, it is a key factor in enhancing the product's stability over other plant and fruit seed oils.

- **Lemon Seed Oil** (*Citrus medica limonum*) is obtained from the seeds of lemons used to produce juice. It is high in oleic acid (9-16%), palmitic acid (16-26%) and linoleic acid (32-42%) which makes it ideal for use in moisturising creams and other skin care cosmetics.

Lipexel from Sederma restores the skin's natural lipidic film. The oil obtained from the seeds of sponge gourd (*Luffa cylindrica*) mimics the skin's fatty acid composition and compensates for the harsh effects of cleansers. The dried skeleton of this fruit is commonly known as the loofah sponge. The composition of fatty acids in Loofah oil is similar to *stratum corneum* lipids. Loofah oil is very rich in linoleic acid INCI name: Ethylhexyl palmitate, *Luffa cylindrica* (seed) oil.

Sun-related products

UVA / UVB protection

Hydrofiltrat Paniopsis G from Codif offers daily protection with strong antioxidant properties that have protective and repairing effect regarding UVA and UVB damage and also provides anti-elastase activity. INCI: Glycerine (and) water (and) *Inula viscosa*.

Repair Complex CLR PF from CLR-Berlin is a lysate of bifidobacteria consisting of bacteria metabolism products, cytoplasm fractions, and cell wall components. The active potently protects against biological and UV-induced damage in the skin by strong anti-immunosuppressive activity and increasing DNA repair. It stimulates the natural DNA repair mechanism after UV irradiation; acts against formation of double-strand breaks (micronuclei); reduces the risk of developing chronic photodamage; and acts against UV-induced immunosuppression. INCI name: Bifida ferment lysate.

Preventhelia from Lipotec is a tetrapeptide that prevents the damage caused directly or indirectly by UV radiation to DNA and proteins, preventing skin from photoageing. It contains aqua, tetrapeptide-21, caprylyl glycol.

Hydrofiltrat Static G from Codif is powerful antioxidant that extends the sunlight tolerance of skin. It is an aqueous extract of the seaside plant Immortelle Bleue. Its powerful antioxidant properties trap free radicals and protect the biological structures of the skin. It contains glycerine (and) water (and) *Limonium narbonense* flower/leaf/stem extract.

Tanning accelerator

Tyr-Excel from Sederma promotes faster, darker tanning and restores the cutaneous barrier. It helps stimulate melanocyte activity and melanin pigment production while restoring the skin's lipid profile. It prevents moisture loss during sun exposure and the cellular characteristics of tanning appear more quickly. INCI name: Oleoyl tyrosine, *Luffa cylindrica* (seed) oil, oleic acid.

SPF enhancer

SolPerForm 100 from Croda has been proven to dramatically increase SPF levels (*in vivo* and *in vitro*) while maintaining UVA/UVB ratios. Extensive studies have demonstrated broad efficacy across a range of formulation types including those with inorganic sunscreens, as well as those with organic sunscreens and also those which combine both types of filter.

Nyamplung Oil from Soliance is based on the exceptional biodiversity of Selayar Island in the Indonesian archipelago. Nyamplung Oil, a certified organic cosmetic oil (ECOCERT standard), is extracted from the kernels of *Calophyllum inophyllum*, a tree which originated in Pacific islands. Therapeutic properties are well known. Nyamplung Oil is naturally rich in unsaponifiables, especially in tocotrienol. This high quality oil is obtained using a specific cold pressure process. Nyamplung Oil prevents photoageing through three synergistic properties. As a SPF booster, Nyamplung Oil optimises sunscreen performance. Nyamplung Oil prevents DNA damage induced by UV exposure. The oil is a free radical scavenger that limits oxidative stress. INCI name: *Calophyllum inophyllum* seed oil.

Functional naturals**Natural solubiliser**

Nature Sol from LCW Sensient is a natural solubiliser that is said to be derived from natural, renewable sources (sugar cane). It is ideal for use with oil-soluble dyes, essential oils, natural oils, actives and glycolic extracts. It has good solubilising properties and is an excellent emulsifier for O/W emulsions.

Natural thickener

Nature Cellgum Plus from LCW Sensient is a thixotropic colloidal thickener derived from wood. It is ideal for formulating spray products and is an excellent emulsifier for surfactant-free O/W emulsions. It has outstanding waterproof and non-transfer properties in association with hydrophobic powders and pigments. It also improves the



Oranges.

stability of formulations containing a high concentration of pigments.

SLS alternative

Mackol CAS-100N from McIntyre Group is a special, naturally derived, dry form of sodium coconut oil fatty alcohol sulfate. It was developed for all natural, mild shampoos and skin cleansing products. The product is an easy-to-handle "flowing" solid. Mackol CAS-100N has a low free fatty alcohol content. This property maximises formulating flexibility. INCI name: Sodium chloride, sodium coco sulfate, coco alcohol, sodium sulfate.

Natural colours

NatPure Colours from LCW Sensient form a complete range of sustainable and edible cosmetic colours (dyes, lakes and pearls), that are derived from beetroot, curcumin, black carrot, copper chlorophylline, caramel and vegetable black. The black carrot produces a natural blue (rare in the natural colour portfolio).

UnivarColour from Univar offers a range of natural colours which include Beetroot Powder 42047 [E-162], Cochineal Powder 44000 [E-120], Carmine Powder 44002 [E-120], Carmine Liquid 44012 [E-120], Chlorophyllin Powder 42056 [E-141], Chlorophyll OS Liquid 42058 [E-141], Chlorophyllin AS Liquid 42059 [E-141], Curcumin Powder 42066 [E-100], Curcumin WD Powder 42071 [E-100], NET Turmeric [E-100], Encyanine Powder 42010 [E-163], Encyanine Liquid 42011 [E-163], Citrus Oil, Aronia Powder, Red Fruit Concentrates, Vegetable Carbon Black 10001 [E-153], Black Carrot, Beta Carotene CWS Powder 42050 [E-160a], Beta Carotene Emulsion [E-160a], Beta Carotene OS Liquid STST [E-160a], Caramel Powder [E-150a-d], Caramel Liquid [E-150a-d], Lutein Powder 42082 [E-161b], Paprika Powder [E-160c], Paprika OS Liquid 42076 [E-160c], Nettle Extract OS, Spinach Extract OS, Plant Extract Kiwi Green, Safflower Extract,

Gardenia, Malt Extract, Blue Anthocyanin 42014, Elderberry Extract, Bell Pepper, Annatto AS Liquid 42031 [E-160b], Riboflavin [E-101].

Amicolor is from Alban Muller and the range includes four colours called Madder Red, Broom Yellow, Alfalfa Green and Genipa Blue. In addition to being coloured, the ingredients may also add functional value to the formulation. Madder Red extracted from a root (*Rubia tinctorium*) has astringent and antioxidant properties, and Broom Yellow (*Genista tinctoria*) which is derived from Dyer's Broom flowers, is rich in flavanoids. The green dye, made from Alfalfa (*Medicago sativa*) leaves is known for its strengthening and nourishing properties, and Genipa Blue, which is extracted from the Genipa (*Genipa americana*) fruit, has soothing and softening properties. Most of the range is extracted from plants grown in France. Genipa Blue comes from material harvested in South America. These dyes are not claimed to be 100% natural because of the manufacturing processes used for their derivation.

With **Genipa** from EcoFlora, *Genipa americana* black to dark blue colouring plant extract is obtained from a fruit which originates from the Latin American rainforests. This natural resource is abundantly found in the rainforests of the Colombian pacific coast (among others). EcoFlora has developed a natural colour in liquid and spray dried forms.

Traditional colours from Sabinsa offer three natural colours – red sandalwood, henna and brazilwood. Henna (*Lawsonia alba*, *Lawsonia inermis*) is a red colour. Brazilwood contains brazilin also known as Natural Red 24 which is a red pigment that comes from the heartwood. Brazilwood has been used traditionally as a food coloring, e.g. to colour Easter eggs. The colour in an acidic solution is yellow, but in an alkaline preparation is red. The heartwood of the red sandalwood tree (*Pterocarpus santalinus* Linn.) contains santalin A and B, and these are soluble in organic solvents and alkalis, but not in water.

Consumer worries

Consumers seem to be ill-informed about many topics, especially parabens, synthetic colours, and sodium lauryl sulfate (to name but a few). There are solutions that are available. PC

Footnote

Brochures and technical data sheets are welcomed by *Personal Care* for the preparation of reviews of products and ingredients. Information should be sent to dweckdata@aol.com