

## In-Cosmetics Seminars

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John Woodruff

Over the course of the 3 day event there were 84 seminars representing nearly 40 hours of presentations and covering the complete range of cosmetic science. Following is an overview of those talks that the author was able to attend.

Although there was no particular theme to the seminars sun care continues to be of major importance and the opening presentation in Theatre 1 was about the benefits and advantages of a new generation of SunCat sunscreens by Patrick McDermott, **Surfachem**. SunCats are manufactured by the **Kuo Ching Chmical Co.** of Korea and described as double spheres of water/oil/water 1 micron in diameter. They consist of 20% ethyl methoxycinnamate, 10% octocrylene and 20% butyl methoxydibenzoylmethane in a phospholipid, water and butylene glycol system. The spheres are water-dispersible and form a thin protective film on the skin surface. 5% in a finished formulation is said to impart an SPF of 32 with broad-spectrum protection.

A presentation on behalf of **Stearinerie Dubois** described how a product's SPF and texture could be improved by careful choice of emollients and Stefano Mandredini, **Kailichem**, described a dualistic photo-protective agent that combined UV protection with anti-oxidant properties that enables a reduction in the level of filters needed to attain a desired SPF and UVA protection.

Bicotene Antiox was described by Lucyanna Barbosa, **Bicosome Technology**, as an ingredient that prevents skin damage from sun exposure by stabilising antioxidants and promoting their penetration into the epidermis. This results in reduction of free radical formation and protects collagen from infra-red radiation.

An advanced sun protection system was described by Martin Krause, **Bayer Material Science**, which was based on polyurethane-64 and available as Baycusan C2000. It comprises 40% solids in ethanol and provides a significant SPF boosting effect and improved formulation aesthetics, making for easier application on dry and wet skin. It has a non-tacky after feel and is fast drying, leaving a flexible water-resistant film on the skin. The addition of 2% Baycusan 2000 to a sun protection product was said to increase its SPF from 22.6 to SPF35.

The aim of sun protection is to protect the skin from the harmful and anti-aging effects of UV radiation. There were many seminars about anti-aging products and Steven Schwartz, **IRS**, presented a review of the signs of skin aging and how to evaluate them for determining product efficacy. According to Schwarz there are five signs of aging: lines and wrinkles; dark

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spots and uneven skin tone; sagging and thin translucent skin; dry skin and open visible pores. These signs are a function of both chronological aging and photo-aging and both are cumulative processes.

Facial lines and wrinkles comprise several specific regions of interest and typically anti-aging products aimed at reducing them are measured on the crows' feet areas. However, region specific products can be measured anywhere on the face for any improvements in particular areas of interest. Measurements can be instrumental using image analysis and silicone replicas or by expert visual grading and subject perception. In a fascinating presentation Schwarz showed the different types of lines and wrinkles and how, using expert graders and image analysis, it was possible to differentiate between the types and severity of each category. He then discussed the techniques for evaluating other typical signs of aging and determining improvements by cosmetic treatments over time using a variety of instrumental techniques.

There were many ingredients offered to help delay or mitigate the signs of aging besides those offering protection from UV light. Improving skin tone is one such and an innovative method of achieving this was presented by Fabrice Lefèvre, **Induchem**. Using the title "A new generation of microbiote activated skin whitening agents" he defined a perfect skin as a luminous bright skin of uniform colour and without imperfections. **Induchem** has launched Brightenyl: an aqueous solution of tri-hydroxy benzoic acid  $\alpha$ -glucosides, designed to penetrate the upper layers of the stratum corneum and then to be bio-activated by  $\alpha$ -glucosidases in the skin. Tests were presented that showed Brightenyl was a powerful antioxidant that imparted photoprotection to DNA, inhibited melanin transfer and inhibited inflammation pathways and that it significantly improved skin brightness and skin tone by reducing skin redness, melanin content and spot concentrations of melanin.

Another ingredient that promised a perfect skin was Ceramosides HP from **Seppic**. It was launched at In-Cosmetics 2015 and Yohanna Sander described it as a unique complex of plant-based ceramides, identical to those found in the skin, combined with digalactosyl diglycerides and containing high concentrations of omega fatty acids. It is a wheat [*Triticum vulgare*] seed extract that is said to tighten skin and reduce pore size by boosting synthesis of collagenase inhibitors and TIMP-1 and blocking the activity of elastase, which is implicated in the degradation of dermal elasticity.

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Syn-Coll is an antiaging ingredient aimed at women in China that was described in a presentation by Mathias Gempeter, **DSM**. Although crow's feet tend to appear on Chinese faces 10 years later than with Europeans they then undergo a rapid period of aging between 40 and 50. Syn-Coll contains the peptide, palmitoyl tripeptide-5 in aqueous/glycerine solution, and is claimed to improve skin firmness and elasticity and reverse the signs of aging in just four weeks in both Chinese and European users.

Ingredients of marine origin are increasingly popular in skin care and Jérôme Loeuil, **Seppic**, described the sourcing of a new ingredient trade named Ephemere from *Undaria pinnatifida*, a brown seaweed found on the coast of Brittany. Tests show that Ephemere can protect mitochondrial DNA integrity, protect the skin against free radical formation and improve the micro relief of the skin's surface.

Skin cells require oxygen for cellular respiration within the mitochondria and to activate the cell's energy cycle involved in cell regeneration. Yohanna Sander, **Seppic**, described Sepitonic M3, a combination of magnesium aspartate and zinc, copper and calcium glutonates, and how it increases the immediate availability of oxygen to the skin. This causes an increase in cell metabolism and regeneration and results in a smoother skin texture and reduced wrinkles. It is also said to protect the extracellular matrix and the structural proteins of fibroblasts. Sepitonic M3 also has antioxidant and anti-glycation properties to improve the skin's flexibility and is said to boost the effectiveness of cosmetic products aimed at all age groups.

Elzbieta Kasprzyk, **Tri-K**, presented a multi-functional bioactive protein extracted from the seeds of baobab tree to defend and restore skin from photo-aging. Trade named Baobab Tien with the INCI name hydrolyzed Adansonia digitata seed extract it is claimed to defend skin from UV stress by limiting cellular photo-aging. It also restores skin vitality by significantly reducing DNA damage following UV exposure and maintains healthy, supple skin with amino acids. Kasprzk showed the different tests used to support these claims and helped the delegates understand the importance of DNA in maintaining a healthy skin.

The repair of UV-induced damage to DNA was also the target of Brightlette, presented by Cristina Carreño of the **Biointec division of Lipotec**, with the title "Step by step toward an even brighter skin" Biointec uses living microorganisms to obtain natural molecules with specific cosmetic benefits while preserving the environment because there is neither harvesting nor extraction from nature. Brightlette is a biotechnological extract that acts at

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various stages of the skin pigmentation process to brighten and homogenise the skin complexion. In clinical tests, the ingredient was shown to result in a 61.1% melanin reduction in hyperpigmented skin at 2% dosage.

Retinoic acid and its derivatives are well known active materials for skin care but there are problems of instability, irritation and legislative restrictions. John Gormley, **Grant Industries**, presented a new retinoid trade named Granactive Retinoid, which contains 10% hydroxypinacolone retinoate in dimethyl isosorbide. DMI is both water and oil compatible and is an excellent solvent and penetration enhancer that carries the hydroxypinacolone retinoate into the deeper layers of the epidermis. Hydroxypinacolone retinoate is far more stable and less irritating than other retinoids and is recommended for antiaging formulations. The presentation was illustrated with clinical test results that showed a dramatic reduction in wrinkles and an improvement in skin renewal and skin tone. Age spots were reduced and skin regained lost elasticity and tightness.

Skin care products are primarily emulsions and sensorial textures are an important attribute that has received much attention in recent years. **Dow Corning** gave a preview of DC 3901 Liquid Satin Blend, which was described as a material that had a unique stretchy-stringy rheology. It is a crosspolymer between dimethicone and dimethicone/vinyldimethicone and is not an elastomer. It imparts intense lubricity with a satin-like after-feel to emulsions and anhydrous products. It is suitable for cold processing and clear products are possible.

Hair was not ignored at In-Cosmetics 2015. Tony Gough, **Innospec**, discussed formulating high performance, sulphate-free cleansing products suitable for hair and skin. Innospec has launched Iselux, [INCI: Sodium lauroyl methyl isethionate] as a cost effective alternative to sulphated surfactants that produces a rich creamy foam, is easy to thicken with betaine or salt, can be used to formulate clear products and is mild on the skin.

Gough also presented Shineblend Max from **Innospec**, which is a mixture of diphenylsiloxy phenyl trimethicone in C12-16 alkyl benzoate. Gough showed how Shineblend Max gave significant improvements in hair shine when compared with other agents and summarised his presentation by saying initial studies have focused on anhydrous hair shine serums and sprays. However aqueous leave-on and rinse-off applications are being investigated and additional testing is underway to expand its use for lipstick and other colour cosmetics.

Dave Popplewell's presentation on behalf of **Ashland** was about N-DurHance A-1000 polymer that he claimed was taking the latest trends in shampoo formulating to new levels of

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sensory and functional performance. N-DurHance A-1000 [INCI:

Polyacrylamidopropyltrimonium chloride] is claimed to be a durable and substantive conditioning polymer for hair providing a more permanent conditioning effect. It restores hair to a hydrophobic state and the benefits improve over the course of 5 shampoo cycles and persists on the hair even after multiple washes, said Popplewell.

A new multifunctional styling polymer named Tilamar Fix A149 was presented by Mélanie Waeckel, **DSM**. It is an acrylates copolymer that is said to be suitable as an additive for all forms of styling products. It is quick drying without stickiness and gives a very strong hold. The presentation was illustrated with various hair styles, concept formulations and hairdresser tips and products included aerosol and pump spray applications, mousse, hair straightening, volumising and root lifting and a crystal clear styling wax for men.

A hair styling material from sustainable natural resources is Satiagel VPC512 INVI: Carrageenan] presented by Smita Fulzele, **Cargill**. Carrageenans are a texturizing ingredient extracted from red seaweeds (Rhodophyceae) with highly effective thickening and gelling properties. Satiagel VPC512 may be used to provide a hair styling gel when dissolved at 2.2% in water. It does not need to be neutralised and the result is a non-sticky gel with good curl retention properties, even at high humidity.

Lucien Leusink, **Kao Chemicals Europe**, described Danox HC-30 as a hair conditioner that showed synergy between an esterquat and amidoamine, to give behenamidopropyl dimethylamine. This is supplied in combination with a fatty alcohol and lactic acid to give an environmentally friendly product with an excellent performance in hair conditioning formulations, said Leusink. It can be processed at room temperature to deliver medium conditioning or for a more intense conditioning, the formulation can be processed at high temperature, achieving an excellent performance for badly damaged hair.

**Galaxy Surfactants** are well known for their hair cleansing ingredients but skin was the target for cleansing without compromise, presented by Nirmal Koshti. Skin cleansing helps to promote normal exfoliation but harsh surfactants strip off NMF, lipids and proteins and seriously impair the skin's barrier and moisture balancing function. Glutamates are mild cleansers that remove surface grime but do not compromise the barrier system. Loshti introduced Galsoft GLI21 as a synergistic mixture of cocoyl isethionate and cocoyl glutamate as an ideal primary surfactant for cleansing formulations at skin pH.

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Preservatives and alternative means of securing the safety of cosmetic products against microbial attack are a hot topic. A presentation by Laura Szymczak-Frye, **Lonza**, was entitled “the latest in broad spectrum protection for personal care products” and it focused on Geogard LSA. It is a water-miscible and oil-soluble blend of butylene glycol, benzyl alcohol, sorbic acid, caprylic/capric triglyceride, lauryl alcohol and myristyl alcohol. The butylene glycol is a good solvent and enhances the antimicrobial activity of the benzyl alcohol. Lauryl and myristyl alcohol work in synergy with sorbic acid and the caprylic/capric triglyceride promotes stability of the mixture. Geogard LSA is effective between pH 3 – 6 at a use level 1-2% and is compatible with wipes.

Not a preservative but targeted at the bacteria that break down human sweat into odorous fatty acids Sensidine DO was presented by Susanne Schmidt, **Shulke & Mayr**. It combines the deodorant and skin care properties of ethylhexylglycerin with the antimicrobial properties of octenidine HCl. Sensidine DO inhibits the growths and multiplication of odour-causing bacteria on the skin and in sniff tests 0.5% Sensidine DO was found comparable to 0.3% triclosan. It is recommended as a replacement for triclosan in all products except those containing anionic surfactants.

Testing of products was also on the agenda. Frédéric Nunzi, **IDEA Laboratories**, discussed the different ways of in-vitro testing ingredients for potential sensitisation. The results of eight tests are taken into consideration but LD50 values are only available for testing done prior to 2013. Because of the ban on animal testing it is estimated that 14 million euros have been invested in finding non-animal sensitisation tests. So far four tests have been validated or are soon expected to be so. They are the direct peptide reactivity assay (DPRA); KeratinoSens assay; the human cell line activation test (h-CLAT) and the myeloid U937 skin sensitization test (MUSST). Nunzi enlarged on these tests and discussed their advantages and disadvantages.

Stability testing is also an essential part of launching a cosmetic and the presentation on accelerated stability and comparative shelf life prediction by Arnold Uhl, **LUM BmbH**, had standing room only despite it being at the end of an afternoon. Uhl described the instruments made by LUM that are used to predict stability problems. Using the LUMSizer it is possible to calculate the velocity distribution of emulsion droplets in a centrifugal field as well as particle size distribution. By applying STEP technology the instrument determines demixing processes of dilute or concentrated emulsions for up to 12 different samples simultaneously.

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Comparative stability ranking and shelf-life determinations of undiluted dispersions in original concentration are done in minutes instead of months at temperatures from 4° to 60°C.

There were many more seminars but a limited amount of time in which to attend them.

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