

In-Cosmetics Seminars

1st Published in SPC – 2016

John Woodruff

In-Cosmetics gets bigger every year with more stands, more visitors and more seminars.

Following is a brief review of some of the seminars that the writer was able to attend.

The overall heading for the seminars was innovation so the presentation by Valentini Sedini, **Synerga**, was a useful introduction to the discovery of innovative solutions. Historically, the discovery of active ingredients were from traditional remedies or by serendipity. At **Synerga** a laboratory has been established to predict molecular dynamics and interactions of potential active ingredients that may not be evident at first sight. Understanding the importance of molecular substructures may lead to activity improvements and help solve problems and hint solutions. In summary Sedini said that the benefits of predicting innovation by predicting molecular interactions lead to greater ingredient efficacy covering a broad spectrum of activity and new fields of application leading to a better focus on tests to substantiate activity.

Claiming innovative anti-aging solutions based on HA technology was Giuseppe Calloni, **Biopharm USA**, who described miniHA, a low molecular weight hyaluronic acid that provides a deeply moisturising effect with repairing and antioxidant capacities by transdermal absorption. Also described was Hyacross, a high molecular weight hyaluronic acid, which provides a protection effect by forming a 3D network layer, and HyacrossTG100 containing small and soft particles that can be used as a wrinkle filler. Hyacolor is an oil-dispersed HA used for lip moisturising and plumping and cationHA is designed for hair-care products to keep hair and scalp moisturised and healthy.

Control of water balance is essential in order to maintain cell volume and preserve intracellular solution for optimal metabolic activities and protect its macromolecular structure against osmotic stress. A presentation claiming new advances in skin moisturising was given by Johan Jansen-Storbacka, **DuPont**, who said that the water balance in the skin may be disturbed by external aggression and is restored through osmosis. This process is managed by osmolytes within the stratum corneum and betaine and inositol are major osmolytes and part of the NMF (Natural Moisturizing Factor). DuPont has developed three osmolytes: Genecare OSMS and Genecare OSMS BA, which are betaines and Genecare MI, which is inositol; all three are derived from sugar beet and have COSMOS approval.

Cosmetics is a highly competitive market and providing proven benefits is ever more important. Stephen Schwartz, **International Research Services**, described an eight week evaluation of four test products on skin condition. The work was undertaken in order to develop a product that could compete with the market leader. Sixty-four subjects were

In-Cosmetics Seminars

1st Published in SPC – 2016

John Woodruff

randomised into four groups and each group was given one of four products to use.

Improvements in skin health, texture, wrinkle reduction and pores were evaluated over an eight week period. The data collected showed the sponsor company that its anhydrous formulation was equivalent to the market leader in terms of efficacy and superior to alternative formulations and could also be used to support the claims made for the product.

Product preservation is of major interest [see feature] and there were well-attended seminars on the subject. Jan Jäinchen, **Dr Straetmans**, outlined current challenges in the preservation of cosmetic products. Approximately 1500 challenge tests are performed on behalf of customers by Dr Straetmans every year. The organisms selected for the standard challenge tests are those that commonly occur in cosmetic products because of the environment and the consumer, however it was found that, despite proving effective against these, growth of other organisms could still occur. Dr Straetmans carried out a risk assessment and after identifying surviving organisms concluded that they were “house germs”, which occurred mainly in the product transfer pipes and filling lines.

These organisms were isolated and identified and strains obtained commercially and these plus the isolated strain and the original contaminated product were then used as test organisms. It was found that preservative systems could be effective against the commercial strain and isolated cultivated strain but still fail against the contaminated product. Following this discovery **Dr Straetmans** developed Verstatil Synacid [INCI: Aqua, glycerin, sodium levulinate, sodium salicylate, sodium anisate] and tested its efficacy against a number of problem organisms. Within the pH range 4 – 6 it proved very efficacious in all product types except emulsions, where it required the addition of caprylyl glycol or glyceryl caprylate.

Naama Eylon, **Sharon Laboratories**, talked about balancing the needs of the formulator and consumer when preserving a product in the “Free From” era. The formulator is guided by science and wishes to combine the best performance with safety. Marketing departments look at possible market niches suggested by the media however a recent survey found that 70% of consumers don’t care what is in a product as long as it is affordable and performs satisfactorily. Despite this the search continues for preservatives that are natural-like, mild, effective and affordable, said Eylon, and suggested that SharoSENSE comprising a synergistic mixture of thymol and linalool met this requirement.

The agony of choice was the title for the talk by Christine Oleschkewitz, **Schülke & Mayr**, when describing the options to protect cosmetic formulations. Graphs showing trends in

In-Cosmetics Seminars

1st Published in SPC – 2016

John Woodruff

preservatives world-wide demonstrated the rise in use of organic acids, of alcohols such as benzyl alcohol, phenoxyethanol and phenethyl alcohol,¹ and of multifunctional additives like ethylhexylglycerin, caprylyl glycol, and pentylene glycol. In answer to these trends **Schülke** has developed three synergistic mixtures; Euxyl K 903 described as a new mild system based on organic acids and benzyl alcohol; Euxyl K 940 comprising efficient aromatic alcohols boosted by ethylhexylglycerin and Sensiva PA 40, which is a synergistic mixture based on phenylpropanol, propanediol and caprylyl glycol with tocopherol. Euxyl K940 and Sensiva PA 40 are not pH dependant and Oleschkewitz showed results of challenge tests using these three systems in various frame formulations.

Concurrent with the seminars were workshops and Evelyn Su, **Sino Lion**, offered innovative solutions for product preservation based on amino acid technology, glycols, plant extracts and synergistic combinations. Everguard PL [INCI: Polylysine] is prepared by fermentation and used as a food preservative but shows impressive results in standard cosmetic challenge tests up to pH 7. Everguard LAE [INCI: Ethyl lauroyl arginate HCl] shows broad-spectrum activity between pH 3 – 7 and synergistic activity if used with caprylyl glycol.

It is said that we are host to a greater number of microbes than the number of cells that compose our bodies and that the majority of these are essential for our well-being. The importance of the skin microbiome was discussed by Durant Scholz, **Active Concepts**, who said that chemical preservatives in cosmetic products were destroying the “good” bacteria” that reside on human skin. These bacteria are the skins defence against pathogenic organisms and also against environmental pollution. For example *Staphylococcus epidermidis* produces a secretion that reduces inflammation and resists colonisation by *S. aureus* and others are involved in tissue repair and wound healing.

Sholz said ideally cosmetic preservatives would prevent microbial growth within cosmetic products without affecting the skin’s natural microbiome. The skin produces a natural peptide, histone deacetylases (HDAC). HDAC enzymes are expressed in skin cells and when functioning properly the microbial population of healthy skin remains intact, preserving its natural barrier function. **Active Concepts** has produced a peptide derived from the fermentation of lactic acid bacteria, which naturally acidify their environment and produce bacteriocins that promote a protective mechanism by encouraging the growth of commensal bacteria on the skin.

In-Cosmetics Seminars

1st Published in SPC – 2016

John Woodruff

A non-chemical approach to product sterilisation using high hydrostatic pressure was proposed by Gerard Dermazeau, **HPBioTech**. This low energy process subjects products to 4000 bar pressure, which disrupts the cell walls of a large range of micro-organisms. It inactivates both vegetative forms and spores of microbes and is said to have no effect on the product, which can be supplied in mono-dose form to totally avoid the need for preservatives. Whatever preservative system is used the product will need to undergo challenge testing. Because this is laborious, time consuming and expensive the tendency is to add high levels of preservative, just to be sure. Sylvanie Cassard, **BioMérioux**, described a new automated method of challenge testing developed by her company. TEMPO cards are inoculated with 16 sets of samples at 3 different dilutions in culture media. The cards are sealed and incubated for 48 hours. The culture media allows rapid bacterial growth and contains a fluorescent indicator and after 48 hours they are passed to the reading station to automatically evaluate the number of CFU/g in the initial product. The TEMPO instrument uses statistical methods to calculate the number of microorganisms present in the initial sample and numerous tests comparing the TEMPO method with the ISO 11930 method has shown excellent correlation in results.

Protection, whether from microbes, environmental pollution, UV radiation and free radicals or ageing, was a constant theme throughout the seminars.

Life style and environmental factors such as pollution can have an influence on the gene expression in skin and cause epigenetic changes, which are passed on to the next generation of cells even if the stress is absent. Cosmetic ingredients can be designed to protect and reverse the negative changes and these benefits are not only valuable for the user but may also influence the next generation, said Fred Züllli, **Mibelle Biochemistry**. When exposed to UV, the DNA in skin cells is hypo-methylated and old skin cells lack important enzymes. In a bee population Royal jelly is fed to a larvae, which causes it to develop into a queen bee. It is a complex mix that includes proteins, sugars, fatty acids, vitamin B and antibacterial and antibiotic components.

The most important protein in Royal jelly is royalactin that interacts with the epidermal growth factor (EGF) receptor, which promotes tissue regeneration, and increases protein turnover through proteasome activation. **Mibelle** has developed a peptide it named RoyalEpigen P5 that copies the active sequence of royalactin comprising five amino acids. It is encapsulated in a soft shell based on shea butter to improve skin penetration and protect the

In-Cosmetics Seminars

1st Published in SPC – 2016

John Woodruff

peptide against degradation. It is claimed to improve cell turnover and protein synthesis thus accelerating tissue regeneration and improving skin smoothness and radiance.

Bill Johncock of **SVP Cosmetic Ingredients** discussed a novel skin care solution to pollution by traffic-related particulate matter. This is associated with the activation of aryl hydrocarbon receptors in keratinocytes, resulting in formation of dark spots, wrinkles and inflammation.

An effective cosmetic AhR antagonist may significantly reduce the release of such agents giving a new and unique way to protect the skin from pollution, said Johncock.

Florence Bruneau, **proDERM Institute**, discussed detrimental effects of environmental pollution on the skin and the substantiation of anti-pollution claims. According to the World Health Organization (WHO) air pollution is the contamination of the indoor and outdoor environment by any chemical, physical or biological agent that modifies the natural characteristics of the atmosphere.

Bruneau said that the levels of air pollution in most big Asian cities was unhealthily high and a similar situation is developing in industrial cities in Europe. The respiratory tract and skin need protection with the development of free radicals being a major problem on the skin.

Pollution derived oxidation of skin proteins, skin lipids and other functional skin molecules are the second factor of extrinsic skin aging after photoaging and, like UV radiation, it leads to the formation of wrinkles and the formation of pigmented spots.

proDERM has developed various methods to measure the protective effects of cosmetics against environmental pollution including washing efficacy, protective skin barrier formation and antioxidant effects. The favoured pollutant is cigarette smoke and the apparatus “smokes” four cigarettes at a time, the smoke is pumped to a chamber attached to the skin and effects are measured. The method induces pollution stress in-vivo in standardised conditions making screening of active ingredients possible and the method is sufficiently sensitive to detect anti-oxidative properties of cosmetic raw materials and cosmetic products suitable for claims support of “anti-pollution efficacy”.

Anti-oxidant activity is one of the most important attributes looked for in cosmetics and the ingredients that provide it featured in several presentations. That by Jin Woo Min, **GFC Co. Ltd.**, was about Korean Gold Ginseng and its bioconversion. Gold ginsengs are rich in ginsenoside in the root, leaves and berries and different parts of the plant have different types and amounts resulting in different bioactivities. According to studies by **GFC** the berries of gold ginseng include more ginsenoside than the root, showing stronger biological activity.

In-Cosmetics Seminars

1st Published in SPC – 2016

John Woodruff

This undergoes a fermentation process to further increase its anti-oxidant activity and its anti-inflammatory and anti-ageing effects. It also has an inhibitory effect on tyrosinase activity, giving it skin brightening properties.

Whatever cosmetic product is being developed it is important that it complies with the regulations pertaining to its intended market. Martin Perry, **SGS**, covered the topic of international regulatory requirements and explained the differences between major markets. Summarising a very informative presentation Perry said the definition of a cosmetic varied around the world; that there was not universal acceptance of certain ingredients and that enough time must be allowed for regulatory compliance.

John Woodruff

www.creative-developments.co.uk