In-Cosmetics 2017
1st published in SPC 2017
John Woodruff

As always, the annual In-Cosmetics Exhibition also features technical presentations when exhibitors have the opportunity to describe their new ingredients in some depth and show the supporting scientific evidence that substantiates the claims associated with their ingredients. What follows is an overview of those presentations that I was able to attend.

Although every class of cosmetic ingredient was described re-occurring themes were cosmetic preservation (ten presentations), anti-pollution ingredients (six presentations), and sustainability, which, although only appearing in the titles of three presentations, it was also frequently mentioned and sustainability also had its own area with numerous speakers. “Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs” [Ref 1.

Regarding sustainability, the talk by Werner Schuh described the sustainability approach of **Henkel AG**. Schuh said that we are a planet of 7 billion inhabitants, who if continued to multiply and use resources at the current rate, would require five planets by 2050! As this is impossible, in 2010 Henkel drew up a 40-year plan to minimise its carbon footprint and to only use sustainable materials. It monitors progress and Schuh was pleased to confirm that it is on track.

Sustainable raw material supply means using renewable feedstock in place of petrochemicasl. Chris Sayner, **Croda**. travels the world auditing **Croda’s** suppliers and checking the sustainability credentials of their renewable raw materials, palm being a current focus. Croda has twelve manufacturing sites that have RSPO certification and 88% of its global palm derivatives use RSPO palm oil. Sayner said that for Croda, sustainability is about all things environmental including reducing carbon footprint, water consumption and waste and about an increased use of non-fossil fuel energy plus greater efficiency of products in use. Product design in Croda is wholly focussed on delivering new or improved ingredients to meet customers’ desired effects and 60%-70% of its raw materials are renewable and new product developments are measured against the 12 Principles of Green Chemistry [Ref 2].

It is generally accepted that busy life styles can lead to stress and this affects our physical as well as mental well-being. Nowhere is this more obvious than on our faces and Òscar Expósito. **Vytrus Biotech**, explained this by saying the same cells that made our brain also made our skin and can be considered as embryonic siblings from the same ectoderm. The brain and the skin are connected through the Hypothalamic-Pituitary-Adrenal (HPA) axis and chronic stress causes the release of stress hormones like cortisol, inducing various immune and inflammatory responses and affecting the epidermal barrier and skin hydration. **Vytrus Biotech** claims that its Tumeria Zen is an emotional hydration manager that enhances the skin water homeostasis to prevent the accumulated damage of wrinkles, elasticity loss, failure of epidermal barrier and decrease in skin defences. It is an extract of Curcuma longa that is rich in diarylheptanoids, mainly curcumin, that modulates the brain-skin connection, relaxing the mind and reducing the effects of stress.

It can be argued that it is preferable that pollutants are prevented from making contact with skin cells. Patricia Moreira, **Chemyunion**, presented new mechanisms on anti-pollution whereby its ingredient SKinBltz confers an impermeable film to the skin to prevent contact by pollutants. It is composed of polymeric networks of natural polysaccharides from Salvia hispanica seed extract, trehalose and galactoarabinan that act synergistically in reducing pollutant permeation. It is claimed to protect cell DNA, inhibit hyperpigmentation and to have anti-inflammatory properties.

Tony Gough**, Innospec**, discussed trimethylsiloxysilicate film formers that can be used as skin protectants and can provide water-resistance. Trimethylsiloxysilicate resins and blends can prevent

pigment discolouration in make-up by repelling sebum and can impart transfer resistance to lipsticks. The higher molecular weight films are brittle and non-flexible but they can be supplied in carriers like dimethicone, cyclopentasiloxane or isododecane to provide flexible, breathable films to the skin. They are marketed under the Innospec Specsil trade name and Specsil K-80 is a blend of trimethylsiloxysilicate in dimethicone that provides clear, smooth and flexible films that are wash-off and sebum resistant and is a cost-effective alternative to acrylate/dimethicone crosspolymer.

RevCare polymers from **Itaconix** were described by Tom Castle as naturally produced from itaconic acid by fermentation of corn to give itaconic acid that is then converted to sodium polyitaconate using green chemistry. Revcare NE 100S [Sodium polyitaconate] gives excellent hold and anti-frizz properties to hair and is the first hair styling polymer to be COSMOS approved. RevCare MC [Zinc polyitaconate] is a non-biocidal material that reduces body and environmental odours without interfering with perspiration or the body's natural biome.

"Cleanse, Detoxify Protect: The Next Generation of Anti-Pollution Actives" was the title of the talk by Anna Croveto, **Active Concepts**, who said that while most anti-pollution products focus on the skin surface, AC CytoPure PF addresses pollution at a cellular level. AC CytoPure PF is a new approach to anti-aging drawn from the research of sulphur biology with the aim to elevate levels of glutathione, a tripeptide shown to have potent chemo-preventative and anti-inflammatory properties. Sulphur is present in all classes of biomolecules and sulphur-rich compounds play essential roles in combating the signs and symptoms of ageing via up-regulation of glutathione. AC CytoPure PF is derived from a unique dinoflagellate microalgae and it minimises the effects of oxidative stress and accelerates wound healing through an increase in glutathione, while providing protection against cellular and external environmental pollution.

According to Joan Tàrraga, there are four main sources of pollution that can affect human skin. They are sun, weather, urban pollution and chemicals and aimed at providing protection against these is Algaktiv BioSKN from **Greenaltech**. This s a natural and completely sustainable active isolated from the wall of microalgae, INCI: Plankton extract, which supports the skin microbiome to improve cell renewal and has anti-acne, soothing, rejuvenation and revitalising properties. Testing undertaken by Greenaltech shows it out-performing epidermal growth factor (EGF) in just 18 hours and it enhances release of Dickkopf-1, the protein involved in epidermal thickness regulation via keratin-9 synthesis and it is also involved in the reduction of pore size.

Peptides also formed the basis of NaturePep Sacha Inchi [INCI: Hydrolyzed Plukenetia volubilis seed extract] from **Tri-K** and described by Elzbieta Kasprzyk. Sacha Inchi seed oil contains small peptides and is regarded as a superfood with traditional uses in promoting wellness and skin benefit properties. Tri-K has found that it upregulates connective tissue growth factor gene to restore the balance between synthesis and alignment of collagen and elastin. It also regulates protein homeostasis and upregulates antioxidant genes and clinical studies showed it reduces skin sagging, decreases wrinkle volume and improves skin smoothness.

Another natural seed oil with cosmetic benefits is shea (Butyrospermum parkii) butter and **AAK** source this in Burkina Faso and ensures that its sustainable harvesting methods also benefits the people of that region, with an emphasis on supporting and empowering the female population. Because the shea bearing trees are in their natural environment there is no need to clear land, create plantations or use pesticides and fertilisers so AAK claim to be protecting the environment. From the crude shea butter AAK isolates solid and liquid shea emollients and active ingredients, which are obtainable under its Lipex trade names.

Charles-Henri Morice, **Lessonia,** talked about rejuvenation through marine glycobiology, which he described as the power of algae applied to cosmetic science. Algae are hydrolysed to obtain fucoidan, which is composed of small oligosaccharides and is the basis of Fucoreverse that is claimed to reverse the signs of ageing. The oligosaccharides protect and repair the extracellular matrix by blocking the enzymes responsible for its deterioration and repairs by stimulation of fibroblasts and collagen synthesis. As with all the presentations reviewed here the presenter backed claims made by discussing the results of in-vitro and in-vivo testing.

Cold-processing is part of the move towards green and sustainable chemistry and Eva Baldaro, **Hallstar**, presented Olivem 2020 [INCI: Ethylhexyl olivate, sodium acrylates copolymer, polyglyceryl-4 olivate] as a cold-process multi-functional emulsifier based on olive oil chemistry. Olive oil has a similar fatty acid profile to human sebum so is well tolerated and Olivem 2020 has skin hydrating properties and compositions utilising it show an excellent sensorial profile. Baldaro illustrated the effects of pH, salt and various levels of emulsifier and of oil content on simple compositions and showed that it could also be used to prepare aqueous-gels and to gel glycerine.

According to **Solvay,** consumer preferences for organic acid preservatives has resulted in low-pH cleansing compositions, which bring problems of maintaining desired viscosities and rheological and sensorial properties. Solvay's new Rheomer HASE copolymer [INCI: Acrylates/beheneth-25 methacrylate copolymer] was presented with details of the effects of dose, surfactant and salt on product transparency, viscosity and suspending powers plus the specific effects of high levels of organic acids. It was shown that a conventional SLES/CAPB system remained clear without loss of viscosity and that it retained suspending power over the pH range 3 – 7 when thickened with 7 – 8% Rheomer and these attributes are retained even after the addition of 2% salicylic acid.

Thickening modern cleansing systems was the subject of a presentation by Samuel Lin, **Applechem**, who said that the personal cleansing market is moving rapidly toward very mild compositions, especially the amino-acid derived surfactant system. It can be difficult to thicken these systems so Applechem has introduced SorbiThix-L100 [INCI: Sorbeth-230 tetraoleate] as a new generation of non-ionic associative thickener. It has two hydrophilic arms and four capped hydrophobic oleate groups to deliver excellent thickening performance for all classes of surfactants, including glutamates. It can also handle systems with high perfume oil load without affecting foaming and sensorial attributes. It was described as mild and non-irritating derived from natural sorbitol and is supplied as a low viscosity liquid suitable for cold processing and effective in the pH range 4.5 – 7.5,

There was much more to see and hear throughout the three days that the show was open: Emma Meredith, CTPA, hosted a panel of experts to discuss concerns over Brexit and stressed that if British companies wish to export to Europe they will still have to fully comply with the European Cosmetic Products Regulation, including requirements relating to safety, labelling and the ban on animal testing and it may mean appointing a responsible person within the EU. There are many other ramifications and much of this is available for members and non-members of the CTPA on its web site http://www.ctpa.org.uk/

Maria Coronado-Robles, **Euromonitor**, discussed ingredient trends and innovation in sun protection in a presentation full of statistics about the use of various sun filters in major world markets. She predicted growth in spray products, which leads to a growth in the use of light emollients and alcohol and in the addition of vitamins and other additives. Technical seminars on sun protection were much fewer than in previous years and tended to focus more on skin protection using actives that protected against lipid peroxidation and degradation of DNA by supplying antioxidant

properties. One of particular interest was given by Guglielmo Bifulco, **Kalichem,** who talked about a range of technological and active ingredients aimed to overcome the sunscreens functional and technological limit and proposed a range of emulsifiers, filters, sunscreen boosters and skin cells' DNA repairing and protective actives. These included liquid crystals emulsifiers able to absorb UV radiations, active ingredients with a combined filtering and anti-ageing action, patented specialties for anti-pollution, anti-oxidant and UV-A protection boosting and biotechnological nucleotides for DNA repair.

Hair was not neglected and the information presented will form the basis of the Hair Care ingredients feature in the XX edition of SPC magazine and there were many other talks about natural ingredients and skin care actives, which will be reviewed in the Naturals feature in the XXX edition.

Ref 1 Brundtland Report commissioned by United Nations 1987

Ref 2 P. T. Anastas and J. C. Warner, Green Chemistry; Theory and Practice, Oxford University Press, Ox-ford, 1998