

Feature: Skin Care Cosmetics

John Woodruff

Published in SPC; June 2005

This Spring there have been two European events where recent developments in skin care products were discussed. The first was the Innovations presentations at In-Cosmetics, Berlin. The second was SCS Symposium under the title of Technology & Trends in Skin Care Products. Analysing the titles it would appear that anti-ageing in all its different aspects is at the forefront of recent developments by ingredient suppliers.

At the SCS event Claire Brinley, Euromonitor, said that skin care accounted for 22% of the world-wide growth in cosmetics and toiletries and that anti-ageing and anti-cellulite were the two areas where growth was strongest in this market segment. Interestingly, at the same event Brian Parker of the Medicines and Healthcare Agency said that as cellulite was not a recognised medical condition there were no objections to products that were claimed to improve it.

Today the sun gets the blame for causing visible signs of ageing with UV-B radiation burning the top layers of skin and UV-A penetrating more deeply to release free radicals that destroy DNA and inhibit collagen synthesis.

The first defence is prevention but with little development in new sunscreens the emphasis at both events was on minimising damage to exposed skin cells. At the SCS event Peter Dykes, Cutest, said that cosmetics can only target the stratum corneum, which is the outer layer of the epidermis and is only 15 – 20 cells thick on the face and arms. It is an impervious protective layer so to deliver actives into the skin at a concentration that is effective is difficult. How much penetrates the skin depends on the molecular size of the active, the nature of the vehicle, frequency of application and physiological factors such as age and gender. The inter-cellular matrix is rich in ceramides, free sterols and free fatty acids and lipophilic compounds may dissolve in this lipid film. The cells of the epidermis have a water content of about 70% but reduce to 30% in the lower stratum corneum and 10% in the outer layers. This water gradient is very important for maintaining the viability of the stratum corneum and moisturising it is a principal function of skin care cosmetics.

One area of research is to look at animals and plants exposed to high levels of solar energy to determine their survival mechanisms and to see if these may be adapted to enhancing our natural defence mechanisms. At the SCS Symposium Barbara Brockway, Optima, suggested that man had spent a significant time evolving along sea shores and as a consequence ingredients from the sea were physiologically useful to him.

Seaweeds are an abundant source of polysaccharides, vitamins, iodine and docosahexaenoic acid. Blood saline is virtually the same as sea water, which contains the type and quantities of minerals needed to maintain healthy tissue and ex-vivo experiments with human dermal fibroblasts showed how effective sea minerals are in stimulating cell growth.

Other materials of interest described by Brockway are two anti-inflammatory substances; one is pseudopterin is extracted from a soft coral that grows in the Caribbean and the other, an extract of sea parsley, *Palmaria palmate*, found in deep waters of Nova Scotia. Brockway also discussed Extremophiles, organisms that live beyond what was believed to be the environmental limits of life. They include thermophiles from hot vents; halophiles from salt flats and very salty environments; psychrophiles from Arctic waters and the thermoacidic Archae, which survive at low pH and high temperatures. These organisms are a source of enzymes that are able to withstand extreme conditions of pressure and temperature, which are being exploited by the pharmaceutical market and have useful properties for cosmetic treatments.

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SeaAcids AHAs (Engelhard) are marine-derived AHAs with algae extract for exfoliation products. The long-chain polysaccharides in marine algae add to the stability of a product in the same way as other natural gums, but without adding tackiness. The material has an alpha hydroxy acid content of 38-42%.

With a composition of apple and soybean extracts in a non-aqueous butylene glycol vehicle, EquiStat™ ex Engelhard, presents a unique combination of collagen-boosting, anti-inflammatory and inhibitory compounds. The apple extract contains terpenoid compounds that are proven inhibitors of elastase and possess anti-inflammatory and collagen stimulatory activities. Peptides of the soy hydrolysate in combination with soy isoflavones and the apple

triterpenes act synergistically as powerful inhibitors of skin matrix breakdown. This active complex facilitates the development of powerful anti-aging products.

INCI: Butylene Glycol (and) Pyrus Malus (Apple) Fruit Extract (and) Glycine Soja (Soybean) Seed Extract

Rejuvenol™ cationic retinol delivery system was developed to satisfy the cosmetic chemist's requirement for a stable form of Vitamin A that can be targeted to the surface of the skin where it is most effective. The Rejuvenol system has retinol contained in a positively charged lipid shell that offers protection and is substantive to skin. The retinol is released once

the lipid shell interacts with salts that are naturally present on skin. When the salt level reaches a critical level, the shells rupture and gently release their contents, delivering retinol to the surface of the skin.

INCI: Water (and) Glycine soja (Soybean) oil (and) PEG-4 (and) Retinol (and) Behenamidopropyl Dimethylamine Behenate