

31th Winter Seminar Champfèr 2013

The Engadin Cosmetic Marathon Part I (January 27-31)

The Winter Seminar 2013 was held as last year under the theme People - Cosmetic - Science with the subtitle »The Engadin Cosmetic Marathon«. This year it began on January 27 and ended on January 31. The seminar was organised by *Beata Hurst* and *Dr. Fred Züllli* - Mibelle Biochemistry - and *Maria Lüder* - Qenax

According to the results of NASA-studies skin problems like dry skin, flaking and itching behind headaches and vestibular disorder already at place are three regarding health problems of astronauts. The delayed wound healing and increased allergic reactions against different materials was reported. However, systematic

are already interesting data of the working group available that are from the pilot experiment »Skincare«. Here a change of the skin could be shown within 6 months which would take decades on earth. *Stratum corneum* and *cutis* showed a gross lichenification and elasticity was reduced. These changes were reversible and after one year the skin fully regenerated. In order to verify the findings the new experiment »SKIN-B« was started.

The knowledge about skin changing in space and the development of treatments against the changing are of high importance to increase the well-being of the astronauts but also to better understand the phenomenon of decreased wound healing. Should the results of the pilot study be confirmed within the new study, the space stay at the ISS could be used to study aging processes and »anti-aging« actives in skin like in fast motion.

The next speaker of the morning session was *Dr. Stefan Bänziger* - Rahn AG with his presentation of »Anti-Aging Active Ingredients - Facts and Illusions«.

Every kind of information causes subjective expectations at the receiver. The same facts can be presented (correctly) in different ways. Depending on the way of presentation a different impact can be achieved. A customer might easier decide for or against a product. The presentation should sensitize the audience about the different kinds of presentation based on practical examples. The importance of absolute versus relative numbers was shown.

The efficacy of products is often given in relative numbers, since relative numbers are often more impressive. Relative numbers, however, often lead to misjudgements because there is no relation given. A further example is growth in percent. The human being has difficulties to understand percental growth because he



Relaxation exercise with the sport coach

AG. *Birgit Haemel* - ProTec Ingredients GmbH was taking care of the technical facilities to guarantee a smooth handling of the speaker's presentations.

The first meeting started on Sunday evening with a warm welcome of all participants. During the aperitive *Dr. Fred Züllli* presented the subject of the seminar. The title »The Engadin Cosmetic Marathon« was an introduction where the development of products, regulations and packaging are standing now. During the years they went through major changes and their development looked like a marathon on its own.

On Monday morning the seminar began with *Prof. Dr. Ulrike Heinrich* - Dermatonnier and a very special subject of »Skin physiological examinations on the ISS Space Station«.

examinations were missing so far. After a pilot study Skincare (2006/07) the aim of the ISS-experiment »SKIN-B« is therefore to better determine and validate the influences of the space conditions to skin physiology.

Like in the previous study at different timepoints, during the stay and after the space flight the skin of the astronauts should be measured with different methods. Non-invasive measurements had to be qualified for the space flight first. Corneometer and TEWL as well as Visioscan were taken into account. Additionally before and after the flight microcirculation, ultra structure and skin elasticity (Cutometer) tests were performed.

For the ISS-experiment »SKIN-B« no results can be presented yet. Albeit there

has no feel for percental growth due to his evolutionary past. A transparent presentation of facts allowing the receiver to make a substantial decision is spoken for. Conversely it applies that thinking shaped on wishes and idealistic perception suddenly leads to a new reality. The awareness that skin needs protection and care becomes ingrained to the population. Therefore good growth prognoses have been forecasted for skin care ingredients like sun filters and antioxidants for the next couple of years.

In the second part of the presentation that even though cosmetic products are thought to protect and care for skin often do the opposite. Practically every cosmetic base has an up to now underestimated intrinsic radical promoting potential. When these bases are applied to skin the formation of free radicals is excessively promoted. Free radicals are understood as driver for premature skin aging. It was shown that cosmetic active ingredients are able to neutralize the pro-oxidative damage of the base. It was therefore recommended to take care of pro-oxidative side effects during the product development and add cosmetic ingredients that are able to neutralize these effects. It enables the development of cosmetic products that they really do what they should do: to protect and care the skin without side effects.

The next speaker of the morning session was Prof. Dr. Robert Erich Imhof – Biox Systems who spoke about measurements with the title »Measuring is Knowledge«. Measuring and knowledge are inextricably linked with each other. The whole science is based on objective observations with or without measuring instruments. Measuring makes the difference between belief and knowledge. Plato for example believed that heavy bodies fall faster than light bodies, however, measurements could falsify this belief.

Measurements are the key to scientific progress. In the context of the cosmetic industry measuring is an extremely important factor for the product development, product safety and proof of efficacy. The measurement of a variable

increases our comprehension only when the corresponding measuring device is capably used and the received data are interpreted correctly. Well that is fact so in the cosmetic research. Human skin is very complicated and the desired results of cosmetic treatments are often difficult to depict by measurements.

Young and healthy skin for example shows a luminosity that is easy to recognize. But how should such a phenomenon be measured? The aim of the presentation was to stimulate new thoughts about the role measuring in the cosmetic industry. Do we enough, are we doing it well, do we interpret data correctly and could we make more and better measurements? Based on terms of the measurement science it was pointed out with examples what could go wrong.

The first morning session was finalized by the two last speakers from the Zürcher Hochschule für Angewandte Wissenschaften ZHAW. Dr. Evelyn Wolfram and Camilla Stefanache presented *Arnica montana* – From the threatened medicinal plant to a sustainable bio-tech Product.

Arnica montana is a medicinal plant with a long tradition in medicine and cosmetics. It provides anti-inflammatory, detumescent and slightly pain relieving properties and is appreciated by sportsmen eg. after a marathon. In most European countries it is protected because the natural stocks are strongly in danger partly due to ecological reasons and partly due to human influences (wild collection). Cultivation is existing but cannot fulfil the market needs that wild collection especially in Eastern European countries is still done.

The project ArnicActive Cell is financed by the Rector's conference of Swiss Universities (CRUS) in the context of the Swiss EU Enlargement Contribution and is working on the development of cell culture techniques for indirect regeneration and biotechnological production of *Arnica montana* active ingredients. Using *in vitro* fertilization methods like micro-propagation and suspension-culture, the same active ingredient concentrations of mainly

sesquiterpene lactones and polyphenols like in naturally grown plants should be achieved. The economic viability of the process is a focus of the developmental work to achieve industrial applicability. When natural resources are short, biotechnological methods offer the chance to obtain the wanted ingredients with an industrial infrastructure outside the nature and agricultural context. The main advantages of medicinal plants cultivation in bio-reactors are sterile, defined and controlled production conditions. By this means the production of plant actives in standardized quality is possible, independent of soil floor conditions, climate, weather, agriculturally harvest and storage techniques, avoiding social exploitation by wild collection and overuse of natural stocks.

This project contributes to the sustainable protection of *Arnica Montana* for the cosmetic, medicine and at least also the endurance sports.

After a long lunch break in the clear air of the Engadin we came back to a long but highly interesting afternoon session of Dr. Vanya Loroach – Loroach Communication & Training who introduced all of us to a very small world »Molecular Biology of the Cell: the basis for health and beauty«.

The human body is made of approximately 100 trillion cells of some 300 different types surrounded by quadrillions of microorganisms present on the skin and within the digestive system. We all are similar, yet unique galaxies composed of an amazing number of elementary biological systems, living cells. Seen from this perspective, human health and beauty can be defined as a harmonious state where every living cell contributes to the maintenance of harmony within itself and throughout the organism.

How is this harmony maintained throughout life, in a constantly changing environment and as aging proceeds? While this question will undoubtedly keep scientists busy for the next few centuries, molecular biology, a very young science, provides a logical, solid foundation that can make

anyone understand how a healthy cell operates harmoniously and what can go wrong.

At the heart of molecular biology lies a rather simple fact of life: information that we have received from our parents is interpreted in a controlled manner by every one of our cells to make us be what we can be and provide us with tools to do what we can do.

The information we receive is of course our genetic background and it has long been believed that there is not much we can do about improving it. However, recent discoveries in the area of epigenetics challenge this deterministic, Darwinian view of heredity.

What is the relevance of molecular biology to the cosmetic industry of the 21st century? One obvious answer stems from the fact that the more objective part of what we qualify as beautiful is simply healthy and being healthy is an issue that is actively researched by biologists. Another important clue is the extraordinary progress made in characterizing the unique biology that makes us different from each other: thanks to biotechnology, the future of medicine, healthcare, nutrition and cosmetics will be more and more personalized. But perhaps the true revolution that awaits us is the capacity to correct biological dysfunctions years or decades before any symptoms occur: biological knowledge may well transcend the standard distinctions between treatment and prevention, healthcare and cosmetics, health, well-being and ultimately beauty.

The first day finished with discussions about the different presentations we heard during the day and even at the dinner the discussions were ongoing. The second day started with a view into a sector that in the past was linked to the cosmetic industry, and where even today the one or the other idea is originated from. *Dr. Bernd Komp* – Komp Consulting BV spoke about »Homeopathy - a Marathon in the comparative evaluation with the academic medicine«. Alternative therapeutical methods like

homeopathy are well received however they are standing under constant public discussion regarding their distinct scientific proof of efficacy.

Reasons for these discussions are on the one hand in the use of homeopathic medicine in high potencies. As is well known a dilution of D25 onwards contains according to Avogadro's constant only one molecule of a substance. On the other hand an increasingly stricter benchmark for efficacy evaluation of also conventional medicine or medical treatments is applied – »Evidence based medicine« (EBM). This means that for the proof of efficacy in principle only a controlled double blind study in comparison to placebo or according to the principles of the EBM evaluated preparations or treatments must be furnished. It is a fact that an institution like the university ambulance for natural medicine at the Charité in Berlin testifies the will to a serious dispute of the academic medicine with this subject. Homeopathy used by experienced physicians and alternative practitioners in a responsible manner will in many cases lead to good treatment successes based on a holistic therapy concept. Intractable in contrast seems the isolated proof of the efficacy of homeopathic pharmaceuticals according to EBM principles.

The next subject went into another part of the cosmetic industry which is very important for the acceptance of a cosmetic product. *Dr. Marion Fröschle* introduced us to the field of perfumery. Her title »From the Scent Organ to high-tech Taste« gave us an idea where the perfumery started and where it is standing now. In past times the Duftorgel was used a kind of organ with a claviature to create scents on the basis of empirical perception. »Smelling« and »tasting« are both linked to chemical substances as material carriers. Phylogenetically olfaction belongs to the oldest sensory systems. Olfaction works retronasal via the mouth as well as orthonasal via the nose. Scents attain during breathing in our nose to the olfactory cells with the olfactory receptors that with respective fit could interact with a scent molecule (Lock and Key model). The activation of the receptors

leads to the release of electrical signals to our brain and is transferred into a picture. With our Scent and Taste sensors we can differentiate between more than ten thousand different flavours and millions of scents.

The flavour, a term of the sensors, describes the specific smell and taste that is caused by the single chemical compounds or mixture of substances. For production and analysis volatile flavourings are compiled in a headspace collector and the single components are identified via gas chromatography and mass spectrometry. Fruits, vegetables and herbs contain already by nature a wide spectrum of flavours. Up to now in melon about 200 in strawberry about 400 and in coffee about 700 different flavours are verified. To produce a flavour it is however not necessary to always use all substances. Exemplary for a distinct melon flavour only 15-20 flavour substances are determining. Whether this flavour is obtained naturally by the synthesis method of the plants biochemistry or nature identical/synthetic by the synthesis methods of chemistry is irrelevant regarding the taste/smell sensation in the brain: The release of electrical signals to the brain takes place via the identical lock of a substance to the same receptor.

»Nature« with its signposts is a huge research area. In the focus are research activities regarding the analysis of culinary flavour ingredients, the search for new taste intensive molecules from food as well as a better understanding of natural conversions regarding fermentation processes of natural taste ingredients and of cooking traditions globally.

The future projection is showing for 2025 a worldwide population of 8 billion people with an over-ageing of the industry nations. Scientific facts show a loss of olfaction during the aging process based on physiological and anatomic factors. The effects of age on taste sense, preferences regarding food and consumption and sensorial perception have been examined in international studies. Overall a changed food preference with age and reduced appetite is resulting. At the loss

of sensory with age the scent is more affected than taste.

The last presentation of the morning session came from *Prof. Dr. Sven Gohla* – Matahari Technology. He went into the subject of innovation which is the motor for future products. His presentation »Innovation and Implementation« clearly showed us how new ideas can be not only generated but also implemented.

The competition about »shelfspace« and attraction for brands has always become sharper in the cosmetic industry within the last 20 years. Trade and industry are facing always shorter life cycles of products and through new media a better informed clientele. Innovation is, beside image and brand care, the main driver of the industry to attract the consumer for their market products.

Shorter Innovation and product development cycles seem to be almost insurmountable challenges for the organizations of cosmetic manufacturers. The classical »stage-gate process« reaches its borderlines. Despite optimized procedures and team work inside the companies either it doesn't come to target group oriented products within the postulated time or the new product/marketing doesn't reach the wanted attention on the market. *Steve Jobs* said that it is not the task of the consumer to define what they need and wish. It is the task of the industry to take it over. People cannot necessarily and in an abstract way define what they wish but they can immediately say when they see whether it fulfils their requirements.

This presentation gave an impression of the new development process, the so called »Closed-Loop Process«.

At the end of the morning session the whole seminar became very active. A sport coach gave us an introduction into the secret of healthy jogging under the title of »Fit into the future«.

Fitness respectively health is not self evident. Either one does something for it or one inevitably loses it. Facts: The average

Swiss person goes approx. 800 m per day, takes on to many calories and loses approx. 1% of muscles per year after his

the same time the risk of injuries is increased. Many contemporaries are overwhelmed by the intensity and give up



Participants during the lectures

30th year of life. The negative helix could be retarded by every single person. 30 minutes of exercises in a moderate speed is daily enough to keep our organism healthy. Remarkable is that 3 times 10 minutes have a very similar effect.

In everyday life one finds the highest potential. Take the stairs instead of a lift, go to work by foot or by bicycle, hands away from snack vendors. Drink water instead of eating sweets. Give breakfast the necessary attention. After a long lent during a night's sleep the body needs energy for a challenging working day. The meal of fresh and ripe vegetables and fruits, ideal in different colours is one of the most important factors of healthy nutrition. With approx. 5 daily portions we take care for an optimized cell protection.

Jogging – the art of relaxed trotting

Jogging is the entrance variety of running sports. Jogging is meant to be trotting with very short steps and a comfortable degree of strain. The short steps und the strike with the whole foot area care for maximum stability on one leg. The consequences are lower strokes and a lower risk of injuries. At the »big brother« the running a higher speed is reached but at

frustrated. The native jogging is easy to learn for many people and offers a whole rat's tail of positive effects.

The only disadvantage – the speed. »Trotting« cannot be fast but only relaxed, elastic and with a smile on the face! Self massage with the (myofascial relaxation): The Black Roll is a so called foam roller that relaxes and stretches the muscles together with the surrounding faciae and loosens adhesences. The use is relatively simple and very intuitive. Tensions are detected and rolled away. This kind of massage has been spread within short time as ideal form of relaxation enhancement and injury prevention. Nevertheless also for sitting and physically not active people the myofascial relaxation offers very good possibilities to an effective treatment of tensions and injuries.

After this very active morning session a group of participants practiced the theory they have just heard while the other group enjoyed a little skiing or walking or cross country skiing. The seminar continued in the afternoon and what was presented you can read in the next journal where we will give you the new title and the new dates for the coming event at the end of January 2014. ▲