



SWISS SCC – 29th Winter Seminar

in Champfèr the 30th of January
to 4th of February 2011

Part III

Biodiversity in Switzerland *Béla Bartha – ProSpecieRara*

In the year of 1982 the Swiss foundation ProSpecieRara was established with the aim, to keep and promote the versatility of agriculturally used animals and plants. Ever since an amazing versatility in this collection could be saved, spread over the whole of Switzerland. How the foundation came to 1800 fruits, 450 berries and over 1000 vegetables, as well as 200 ornamental plants and with which methods the foundation gets it, is the topic of the first remarks.

What the foundation did in the first years was typical pioneers work, because it should take one decade until the official international community of states finally managed to make up its mind signing a biodiversity convention in Rio that has the aim to keep the whole versatility of creatures on earth. One of the signing states was Switzerland, that 1998 based on the global action plan developed a national action plan (NAP) and since then gives money for the realization. The maintenance inside the NAP is coordinated by the Swiss Commission for the conservation of culture plant diversity (SKEK). ProSpecieRara is here foundation member and since that time board member.

It is noticeable at the present official maintenance work that up to today inside the NAP no initiatives were supported to promote the sustainable use of these valuable resources. ProSpecieRara tries to contact economic partners who can use the genetic resources for its products and therefore can take hold of the offered

reservoir, directly or indirectly. Together with these partners strategies are developed how the further development and use of the resources knowledge could be obtained and a percentage of the sales again is used for maintenance work.

The conference last November in Nagoya (Japan) about the biodiversity convention and its consequences has shown that the use of genetic resources by private parties and the development of mechanisms that allow the institutions, supplying these resources, can take advantage was heavily discussed, especially between developing countries and industrialized countries. Mi-belle Biochemistry and ProSpecieRara have found an exemplary way, how such collaboration between a private company that likes to make use of the collection and an organization that delivers it with its network could look like.

Wednesday afternoon first had social components in the program with Cor-

porate Social Responsibility. The second part was the science around Screening Tests at Plant Extracts and Efficacy Tests with Cell Cultures.

Corporate Social Responsibility *Andrea Weber – Dr. Babor GmbH*

According to the definition of the European Commission CSR (Corporate Social Responsibility) is a concept, where companies voluntarily can implement social and also environmental subjects into companies activities and therewith contribute to the global sustainability and competitiveness. Many of the multinational companies demonstrate their activities to take on corporative responsibility on different internet platforms. The listed action plans let the question come up whether also SME's (smaller to medium size enterprises) could change business activities in the sense of social and environmental acting?



Béla Bartha



Andrea Weber

Activities and arrangements have shown that the company Dr. Babor, especially last year, has started some with respect to CSR and will implement them in the near future. Starting with proposals for healthy nutrition of employees via the restoration of historical facades in Aachen up to energetic provisions is part of the activities. Corresponding examples with an inside and outside effect are listed. The company Dr. BABOR has incorporated the subject sustainability with all its facets included in future subjects.

Screening Tests on Plant extracts

**Dr. Evelyn Wolfram –
ZHAW Wädenswil**

Requirements of the Cosmetic Industry to Plant extracts

Cosmetic products contain more and more plant extracts that should support the products with a label claim or as active ingredients for strong efficacy claims or a combination of both. Following an estimate that more than 1000 different plants and parts of plants are used for cosmetic purposes, a further expansion not excluded.

Screening of Plant extracts: Quality- and Efficacy studies

The cosmetic legislation obliges manufacturers to present a certificate of



Dr. Evelyn Wolfram

their products efficacy if an effect is claimed. Literature research of possible effects from a plant are therefore a central instrument, to get indications about the efficacy of specific plants and their ingredients and on this basis targeted to perform further research.

In the past literature research delivered hints for corresponding tests of a possible plant effect. An identical IN-CI denomination of a number of extracts cannot describe sufficiently enough the effective substantial composition of multi component mixtures. The contents can vary substantially. The used plant parts play a big role next to the year's harvest and the origin of the plant material, as well as the kind, the duration of the extraction, the solvent, the concentration of plant material in solvent, temperature and solid-liquid separation and eventually further preparations steps.

Therefore instruments are necessary that on the one hand can show the increase or decrease of extract efficacies depending on process parameters. On the other hand to help customers of plant ingredients in evaluating plant extracts of different manufacturers regarding quality differences and efficacy.

Instruments are needed that can show the optimization or the reduction of extract efficacy depending of the used process parameters.

In the lecture examples of tools to detect different parameters of plant extract screenings were presented. Phytochemical, anti-oxidative, antimicrobial and enzyme-inhibiting properties can be examined with the focus of High Performance Liquid Chromatography (HPTLC).

Efficacy studies with Cell Cultures

**Dr. Margret Ebauer –
CELLnTEC Advanced Cell Systems**

The cosmetic industry has developed a wealth of new active ingredients in the last decades that should make us younger, more beautiful and should let us look more radiant. Advertising messages of the industry are not al-

ways supported by independent scientifically based tests.

The methods for efficacy evaluation have been enormously advanced. Overall the progress in cell biology with the possibilities of cell cultures and new effective analytical methods have shown ways not only to observe obvious effects of a substance, but also to develop the subjacent mechanisms.

Following the advances in the area of new *in vitro* model and methods development and their benefits for the evidence of the efficacy of cosmetics have been explained.

Efficacy tests, above all the progress in cell biology with the possibilities of cell cultures and new effective analysis methods advanced enormously. Visualized effects of an active ingredient could be coupled with the corresponding working mechanism.

New *in vitro* Models

Progress in the area of *in vitro* models has opened new possibilities for research and evaluation of the newest cosmetic claim substantiation.

The today conventional handling of *in vitro* cell culture comprises the so called 2-dimensional (2D) cell cultures. Indeed the 2D-cultures can be very sensible for the examination of a specific questioning, however remain a very simplified model of the complex *in vivo* situation because many



Dr. Margret Ebauer

physiological processes cannot be displayed.

3-dimensional (3D) cell cultures, being very similar to the physiological scaffold, were developed. The epidermal 3D skin model consist of different layers with proliferating cells in the basal layer und mature cells in the upper layer what corresponds to the natural structure of skin. Hence is the reaction to different factors in 3D structures very similar to normal skin. Some processes specifically the regeneration and differentiation processes can be examined much more precise and a possible *in vivo* reaction can be predicted.

Nearly all processes in skin are based on the interaction between different cell types. For the exact characterization of the physiological relationships the simultaneous cultivation of different cell types (so-called co-cultures) for *in vitro* models will gain importance in the future. Some examples of 3D-models and co-cultures have been explained in more detail.

New *in vitro* Methods

At new *in vitro* models the cultivation of stem cells and precursor cells are the most important developments. Protection and regeneration of epidermal stem cells have been identified as promising approach for anti aging applications. As evidence of the anti aging effect different stem cell specific tests have been developed. Some of them like the Colony Forming Efficiency (CFE) or the measurement of the migration speed of the precursor cells were explained in more detail. Another possibility to prove the stem cell potential is the ability to develop organs. Thus only stem cells and precursor cells have the ability to develop a complex 3D-structure *in vitro*.

Over the last years conventional tests to identify the efficacy mechanism were supplemented with new methods, allowing the analysis of dozens up to thousands of characteristics at the same time. One can speak about a multiplex approach. On the one

hand a big number of active ingredients can be evaluated at the same time on the other hand the effect on a number of different biological pathways could be examined. These novel models in combination with the steady discoveries of new active ingredients and biological perceptions furthermore can demonstrate new ways of developments and marketing of highly active products.

With the new *in vitro* methods the cultivation of stem cells and precursor cells is one of the most important developments. Protection and regeneration of epidermal stem cells have been identified as promising approaches for anti aging applications.

The scientific part of the Winter Seminar ended on Wednesday afternoon. On Thursday two raw material suppliers reported the presentation of interesting products that are presented in the following paragraph, interrupted by a more philosophical view »Who is the human being?«, Birgit Hämel, S&D Chesham GmbH.

Active ingredients for new product ideas

Michèle Lindner and Brigitte aus dem Siepen – GfN-Selco

The presentation began with a controversial discussion about the advantages and disadvantages of natural

versus conventional actives. Following three examples of all categories were presented.

Cydonia Oblonga Extract (Quince)

Known from the folk medicine, plant derived raw material (Quince seed), polysaccharides 0,5 - 0,8 %, arabinose, xylose and uronic acid, pH-stability 3 – 12, very good film forming properties, hydrating, thermo stable until 90°C, anti-inflammatory

Ethyl Ascorbic Acid

Chemical name: 3-O-Ethyl Ascorbyl Ether, INCI Name: Ethyl Ascorbic Acid Excellent whitening effect, effective antioxidant, stable derivative of ascorbic acid, good water solubility, to be used in emulsions and water based systems, anti-inflammatory, inhibits growth of bacteria, improves skin elasticity, promotes collagen synthesis

Aquasense® 3R

Concentrated hydro-glycolic extract from the tree Piptadenia colubrina, standardised in Polysaccharides, INCI Name: Water, Glycerin, Piptadenia Colubrina Peel Extract, Effect on skin: increases corneocyte cohesion, increases formation of NMFs, increase of water balance in skin, adhesion of basal corneocytes,



Michèle Lindner



Birgit Hämel

increased water and glycerin transport into the epidermis, homogeneous distribution and increase of the water balance in skin.

Who is the human being?

**Birgit Haemel –
S&D Chesham GmbH**

...or: Who am I?

...or: What am I?

When does human life virtually start?

Are we only a biochemical construct?

Is he a simple product of co-occurrence?

Is he only a result of mutations?

Are we just 'body'?

Is this it?

Who wants to give an answer?

Green Technology in Cosmetics – expensive and not effective?

**Dr. Joachim Blank –
Brenntag Schweizhall AG**

The green trend in cosmetics steps irresistibly forward. Reduced to the aspect of natural or plant derived in the beginning, the approach refined into various directions: organic, renewable, sustainable, projected for the consumer into a non-differentiable flood of eco-labels. Following a spectrum of products from OTC (Oberhausen Technology Center) will be presented that not just follow the green



Dr. Joachim Blank

trend, however showing very interesting functionalities and new aspects.

BIOBASE components form a widespread liquid crystal structure, lamellar gel network in the water phase of an emulsion. The lamellar structure minimizes the interfacial tension between oil and water phase nearly independent of the oil composition, which guarantees an optimized emulsion process. The BIOBASE line is compatible with all types of normally used ingredients for skin care products. The high flexibility of BIOBASE emulsifiers can reduce the development time of cream and lotion formulations. Since the BIOBASE line is built of naturally derived ingredients, it is free of soap, ethoxylates and other additives that could create skin irritations. BIOBASE emulsifiers are able to reduce skin irritations derived from chemicals, shown in a dermatological study based on 20 volunteers. ECOFOAM, a green surfactant offers extraordinary surfactant mixtures with a balanced combination of foam volume and dermatological properties in cleaning formulations. It can be used as basic surfactant as well as co-surfactant. All ECOFOAM products are made of renewable raw materials. ECOFOAM G and G/B contain sodium-lauroyl-lactylate with antimicrobial effect. This effect is due to its substantivity and affinity to protein structures, especially useful in anti dandruff concepts against *Pityrosporum Ovale*. It could be shown that the quantity of anti dandruff actives in shampoos could be significantly reduced by using ECOFOAM G. With ECOFOAM treated skin shows a much faster re-fattening as with coamidopropyl betaine treated skin. OTC offers a large choice of pearling concentrates, providing rinse-off market products with a perfect pearling effect and let them appear of higher value. O-Pearl products are cold processable, liquid pearling concentrates for body and hair products like shampoos, shower gels, liquid hand soaps, conditioners as well as moisturizing face and body soaps at low use concentrations and they are simple to

use. O-Pearl-products are available as sulfate-free and / or PEG-free varieties, as well as totally made of sustainable raw materials in a 'green' version. O-Pearl pearling products are produced in a patented low energy process, where the energy demand is much below the requirement of conventional pearling agents.

With presentations of interesting raw materials the 29th Winter Seminar ended which was specifically shaped by the high interest and the many questions of the participants to the speakers. The Engadin presented itself this year by its sunny side that also between the presentations an active exchange of experience took place with much spirit and motivation in the fresh mountain air. The organizers would like to kindly thank the delegates for their active contribution during the questioning time of the lectures and looks forward to a range of participants next year.

The Winter Seminar 2012 takes place from January 29 - February 3. The subject of the coming Winter Seminars is:

»(no) Limits in Cosmetics«

The program is ready and published in this issue of IFSCC magazine and on the SWISS SCC website.

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