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In Active We Trust: Sustainability, Traceability and Transparency in Cosmetics

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abstract

Consumer’s mind set is changing. That not only our food traceability is becoming important but also we start to care about our cloths supply chain and we ask ourselves – what is actually inside my cosmetic pot? The products that make us feel good have to be good and honest. It is not enough to claim that products are safe, effective and sustainable. Today’s consumers want to have proofs of it. It is going beyond believing. Therefore, cosmetic industry needs to gain unconditional trust of their customers. Good start would be to make the supply chain of the products transparent, make sustainable sourcing and involve and support local communities.

Introduction

Looking at the forecasts in the beauty industry it is evident that the focus should be on how to contribute positively to the world. Delivering an effective product was yesterday. Beauty industry and beauty brands needs to go much further. The consumers are choosing their products more mindfully and consciously. They are looking for effective product with positive social and environmental impacts. Ethics and social values are gaining more importance. “Purposeful beauty” is what consumers are willing loyally to buy. Total ingredient and their supply chain transparency, best practices in labour issues, social responsibility, empowerment and consciously tune with the nature are only the few of the goals that beauty industry needs to address.



UN sustainable development goals (SDGs) seems to strike the right note nowadays [1]. The 17 goals are applicable to all 195 countries, to all businesses and are the global measures for the joint effort to achieve a better and more sustainable future for all.

RAHN as a cosmetic active ingredient supplier acknowledges its responsibility and doing its best to support SDGs. We take great care to ensure that the development of our active ingredients follow sustainable sourcing, responsible production and readily biodegradable. Furthermore, life cycle assessment technique is used to calculate produced CO₂ through entire supply chain. Supporting international recognised climate projects not only makes RAHN’s active ingredients carbon neutral but much more, it is helping others to live a more dignified life. Supporting the projects bring clean drinking water, clean energy, and light where needed. Healthy forests are home to an enormous diversity of species and are the basis of life for all people, which need to be protected. Finally yet importantly good health care and quality education have to be affordable to all human on our planet.

Providing carbon neutral active ingredients

Life cycle assessment is a technique that is used to analyse systematically the impact on nature and environment throughout the entire life cycle of a product [2]. This is measured in terms of the generated amount of greenhouse gases, especially CO₂. There are several ways of analysing a product’s life cycle and thus the amount of greenhouse gases produced. There are different “cradle-to-” approaches (Fig. 1). Cradle-to-cradle is a biomimetic approach, where products and systems are viewed as waste free nutrients circulating in healthy and safe metabolism as seen in the nature. Cradle-to-grave approach includes the extraction of raw materials to manufacturing, product use, and recycling/disposal. RAHN has selected the “cradle-to-gate” principle as the most appropriate one for a raw material supplier. In this case, analysed is the whole supply chain from seeding and harvesting, through extraction and processing of the raw material including raw material



Fig. 1 Different Product Life Cycle Assessments.

packaging and transportation to our customers. Transparency in the supply chain highlights potential problems and offers opportunities for future optimisation. Furthermore, as doing so RAHN's trusted network partners reveal insights in their own working processes bringing more reliance in business relationship.

Product's life cycle assessment discloses the amount of greenhouse gases produced during the production. The CO₂ amount can be offset by different international climate projects. It is more than just CO₂ savings. Those projects are connected to the 17 UN SDGs and help people in many ways.

Examples from the House of RAHN

RAHN always strives to deliver the highest quality for its customers. Cosmetic actives from the House of RAHN are effective, sustainable, traceable, carbon neutral and combine technology and nature in its best.

Sustainable high-tech food for skin and hair

CELLACTIVE® (Water, Chlorella Vulgaris/Lupinus Albus Protein Ferment, Sodium Benzoate, Potassium Sorbate): this active contains two "king of foods": white lupin and microalgae *Chlorella vulgaris*. White lupin (*Lupinus albus*) seeds have a long history of use as human nutrition and in medicine. The symbiosis of the plant with rhizobia results in the fixation of atmospheric nitrogen for the production of proteins and other nitrogenous substances in seeds while at the same time these contain hardly any starch. *L. albus*' deep roots loosen the lower soil layers enabling optimal soil conditioning and fertility. Farmed *L. albus* does not need additional water or fertilisers. Cultivation of lupin is not only an excellent investment in the soil but in fact above it as well. The beautiful flowers create attractive meadows where our endangered and extremely important bees can collect pollen.

Microalgae have been around for aeons. Microalgae produce approximately half of the atmospheric oxygen on Earth. One of the most remarkable and the oldest known on the planet is the fresh water microalga *Chlorella vulgaris*. Its nutritional value is very high. 100 g of *Chlorella* contains 60 – 70 g protein (dry weight) and can supply the daily protein requirement of an adult. Its cultivation in photobioreactors is one of the most sustainable forms of production. Both superfoods are combined together in CELLACTIVE®, the cell boost-factor for skin and hair. The active ingredient promotes the integrity of the integumentary system at two levels: in the epidermis, it stimulates the production of adhesion proteins in order to improve cellular cohesion. Furthermore, it triggers the production of multiple extracellular matrix components in the dermis and helps skin to quickly regain its firmness and elasticity. Hair also benefits from the



REFORCYL®-AION

Garb'Ageing Clean-Up

NEW

- Activates autophagy
- Removes unnecessary waste
- Detoxifies and repairs aged skin



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use of CELLACTIVE®: it encourages the longevity of hair follicles thanks to invigorated cellular cohesion and improves hair quality parameters such as the anti-static effect and structure. CELLACTIVE® is carbon neutral and two climate protection projects (Stiftung Bergwaldprojekt in Switzerland and forest protecting project in April Salumei, Papua New Guinea) are supporting 10 out of 17 SDGs. For more information, visit the website: <https://fpm.climatepartner.com/tracking/12934-1810-1001/en>.

The upcycling wonder for cellular cleaning

REFORCYL®-AION (Propanediol, Water, Cucurbita Pepo (Pumpkin) Seed Extract, Citric Acid) is not only climate-neutral, it even applies the principles of a circular economy. To obtain this active ingredient, *Cucurbita pepo var. styriaca* is produced in a closed, sustainable loop, representing an exemplary pathway from cultivation to the final product. *Cucurbita pepo var. styriaca*, the pumpkin species used to produce REFORCYL®-AION, is cultivated by family-run organic farm in geographically protected regions in middle Europe. The shell-free seeds are used for oil production, the flesh remains on the field as a soil fertilizer. The remaining press cake is further processed to obtain valuable and precious REFORCYL®-AION extract. This raw material is 100 % biodegradable and not toxic for animals, plants or water organisms. The residual material from extract production is composted and is used as soil fertilizer.

REFORCYL®-AION rejuvenates and purifies the skin by activating the key parameters of a healthy autophagy process. Autophagy is a natural cellular cleaning program. Degradation products are enveloped by vesicles, enzymatically upcycled and then reused. Impaired autophagy weakens the skin barrier and promotes skin "garb-ageing". Clinical studies have shown that activating this form of cellular spring-cleaning markedly improves skin tone and leads to smooth, redensified and revitalised skin.

REFORCYL®-AION is climate neutral. The climate protection projects (Stiftung Bergwaldprojekt in Switzerland and Hydropower for the habitat of mountain gorillas in DC Congo) support 10 out of 17 SDGs. For more information, visit the website: <https://fpm.climatepartner.com/tracking/12934-1903-1001/en>.

Think Globally - Act Locally - from South to North

Sourcing is a very important issue in cosmetic industry. Not only an issue in developing countries. Here are three examples where local communities in South Africa and in Finland are involved in plant harvesting. LIFTONIN®-XPERT ECO, MYRAMAZE® and DEFENSIL®-SOFT are part of RAHN's Clean Beauty Line and they are all carbon neutral. The climate protection projects (Stiftung Bergwaldprojekt in Switzerland, Biomass and Solar energy in South Africa and Forest protection in Mongolia) support 14 out of 17 SDGs. For more in-

formation, visit the website: <https://fpm.climatepartner.com/tracking/12934-2002-1001/en>.

The smart collagen manager for multi generation efficacy

LIFTONIN®-XPERT ECO (Water, Pentylene Glycol, Mannan, Citric Acid) is an intelligent collagen booster obtained from the leaf sap of the South African medical plant *Bulbine frutescens*.

Bulbine frutescens is a small shrub growing in dry valleys in southern Africa. It belongs to the asphodel family, which also includes for example *Aloe barbadensis* (Aloe vera). Like the Aloe vera, *Bulbine frutescens* is a succulent plant and contains a gel-like sap in its leaves. For the manufacture of LIFTONIN®-XPERT ECO, pure sap is obtained by means of gentle cold pressing of the leaves. We enrich the mannan (or polymannose) fraction with the functional ingredient acetylated polymannose (APM) by size exclusion filtration with a corresponding cut-off pore size. Our plants are grown on an organic family farm in South Africa. The agriculture of *Bulbine frutescens* is certified organic and involves in all steps only local families.

LIFTONIN®-XPERT ECO offers an innovative mechanism that can compensate for an imbalance in the collagen metabolism of the dermis in a controlled manner. Its unique activity of fibroblast stimulation and of suppressing the development of inflammatory responses by inhibiting the leukotriene synthesis, makes LIFTONIN®-XPERT ECO a smart manager of the dermis structure. In this way, the formation of wrinkles can be delayed for a long time, and aged skin can be restored to a more youthful condition. LIFTONIN®-XPERT ECO helps everywhere that the long-term quality of the collagen is important: in the anti-ageing area as well as care for stretch marks and tattoos.

Water changes everything – Resurrection plant for stressed skin

MYRAMAZE® (Propanediol, Water, Myrothamnus flabellifolia Extract, Ascorbic Acid, Citric Acid) an extract of *Myrothamnus flabellifolia*, is like an oasis for stressed, "desert-like" skin with a particularly high proportion of protective substances. *Myrothamnus flabellifolia* is known as the resurrection plant (Fig. 2). When the first drops of rain fall, it goes through a resurrection-like process and is alive and green again within a day. A powerful cocktail of active ingredients is responsible for this plant's ability to revitalise and regenerate itself, and this makes *Myrothamnus* a highly interesting raw material for cosmetic applications. *Myrothamnus flabellifolia* grows on rocky peaks. Local communities are harvesting wild growing *Myrothamnus*. Only 10-25% of the plant is harvested. This is called rejuvenation or tapered cut, which is regenerated within 1 year. The plants are 20-30 years old.

MYRAMAZE® is made to protect the skin's cells against dryness and to stabilise the skin's moisture and lipid barrier. Thus,

MYRAMAZE® effectively increases the skin's resistance to irritation and promotes a speedy recovery. The skin is protected in times of "drought", and after the first "downpour" it flourishes again in the shortest possible amount of time.

Aurora Borealis Skin Guardians

DEFENSIL®-SOFT (Propanediol, Albatrellus Confluens (Mushroom) Extract, Citric Acid) an extract of Albatrellus mushrooms, which is able to eliminate the pain in the skin and regulate skin comfort zone.

Albatrellus mushrooms are growing on the ground of the boreal coniferous forests of the Taiga, under the magical light of Aurora borealis. You may call them "the guardians of the forest", as they are so-called mycorrhiza fungi being in a symbiotic association with the roots of the trees. By increasing the potential surface to prospect for water and minerals for the trees, they maximize the health and power of the forest. In return, the fungi receive glucose from the photosynthesis of the trees for their own growth. The Taiga is the northernmost forest formation on earth. It oc-

curs without exception in the northern hemisphere. For DEFENSIL®-SOFT, we chose mushrooms from Finland, which is sparsely populated and known for its intact nature and clean air. To fulfill RAHN's high standard for the responsible treatment of eco-systems, our mushrooms are harvested by hand by experienced Finish mushroom pickers in cooperation with the local community.

DEFENSIL®-SOFT is based on the active principle of the edible Albatrellus mushrooms. The lead compounds grifolin, neogrifolin and scutigeral are natural inhibitors of the TRPV1 receptor and can address the trigger factors such as infrared radiation, acids, xenobiotics and inflammatory mediators at once. Blocking the TRPV1 receptor immediately prevents the transmission of the feeling of discomfort to the brain and prevents the release of CGRP, a very potent trigger of a massive inflammatory response. The skin returns to a state of relaxation and the urge to scratch is immediately suppressed. This prevents development of a lower threshold for skin irritation and thus the formation of a permanent sensitive skin. By efficiently blocking just the TRPV1 receptor, DEFENSIL®-SOFT is the versatile answer to minimise skin irritation or relieve stressed and sensitive skin.



Fig. 2 *Myrothamnus flabellifolia* the resurrection plant is capable of surviving long periods of drought in a completely desiccated state. After the first rain, it will turn green again within a few hours.

Conclusion

RAHN offers the customers transparency, traceability, efficient and sustainable active ingredients for various skin and hair care applications, at the same time is taking responsibility for nature, and engages for local communities. RAHN's cosmetic actives are trustful and fulfil all criteria for being used in "Purposeful beauty" products.

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