

NutraCos

May/August - Year 11 n. 2

Cosmetics



Skin exposome and its interactions within skin microbiota

MARIA GIOVANNA BRUNO
Product Manager

Roelmi HPC
Via Celeste Milani, 24 / 26
21040 Origgio (VA), Italia
www.roelmihpc.com

As reported in the last article published on January/April 2021 issue, different exogenous or endogenous insults could alter skin ecosystem and the skin becomes more sensitive leading sometimes to skin disorders. All the described factors could be identified with the term skin exposome.

SKIN EXPOSOME

All the factors that can negatively affect the well-being of the individual are contained in a single term: "EXPOSOME", in fact the exact description of the term includes the totality of the exposures to which an individual is subjected from birth to death.

Its barrier function makes the skin as an organ exposed during life cycle to a wide variety of environmental factors, these factors trigger biological responses to counter any threats and therefore the skin is a constantly evolving organ that aims to adapt after being influenced by external and internal factors (1).

Ultraviolet radiations, for example, have long been known for the potential damage caused to the skin, also it is possible to find also an important factor of skin exposome such as air pollution that could be directly related to skin aging (2).

According to skin exposome research, the Health and Personal Care market has been experiencing revolutionary changes in recent years, especially regarding the approach to skin treatments considering skin microbiota.

Numerous studies conducted in the last period aim to turn on the light on the composition of the skin by considering the main guests who live in symbiosis with it and to analyze how the product compositions used every day could alter the microbiota composition.

SKIN MICROBIOTA

In addition to having mechanical protection against internal and external factors, the skin has developed a biochemical barrier called microbiota that acts as an invisible armor against pathogenic aggressions.

Skin microbiota means the set of microorganisms (bacteria, fungi, yeasts) that live on the skin, in symbiosis with our organism. Their number is incredibly large: every centimeter of skin is home to more than a million microorganisms, belonging to hundreds of different species.

The microbiota is not identical in all individuals, each person in fact is characterized by its own specific

microbiota. Even individually, the qualitative and quantitative composition can vary according to age, diet and according to the area of the body taken into consideration; in fact the microbial composition will vary near moist, sebaceous and dry areas of the skin.

In any case, in healthy skin the cutaneous microbiota is extremely diversified. In fact, there is a high biodiversity which is dominated by the so-called resident or commensal bacteria belonging to the actinobacteria group.

The development of the microbiota ecosystem begins with delivery and the modality is the first important factor that determines and influences the development of some microorganisms over others. Up to about 3 years of age, the microbiota is enriched with different species with which the child comes into contact and a real balance between the species begins to stabilize, which becomes much more stable after puberty (2).

This condition of harmony between all the guests of our skin is called eubiosis. However, this balance can suffer which can lead to more or less relevant skin disorders. In fact, there are numerous factors that can disturb the well-being of the skin and especially the skin microbiota such as dietary habits, lifestyle, drugs, and prolonged exposure to the sun but also the use of aggressive cleansing cosmetics that eliminate dirt without respecting skin barrier by also altering skin's hydro-lipidic mantle composition.

When the skin microbiota is imbalanced and its composition changes, the skin becomes more reactive, sensitive and fragile. In this condition called dysbiosis, some pathogenic species can take over, which negatively affect some dermatological diseases such as acne and atopic dermatitis.

Numerous scientific studies have shown that maintaining, or possibly restoring, the balance of the skin microbiota is essential for



the well-being of the skin as it is an integral part of the skin's natural defenses.

At ROELMI HPC, we have developed science-based active ingredients aimed at counteracting and mitigating the negative effects of skin exposure involved in accelerating skin aging. Several approaches have been adopted in the research:

To support the reparative processes of inflamed skin with Honey Sun Flower, able to prevent damages induced by UV rays exposure by stimulating and improving the natural immune defenses of fragile skin, by reducing the erythema of irritated and sensitive skin.

To maintain skin barrier integrity with PhytoSerene, the extremely pure β -sitosterol that mimics the function of cholesterol, naturally present into the skin. Showing high compatibility with natural skin matrix, PhytoSerene is able to reduce the inflammatory processes and related skin redness and concurs to prevent skin damage against chemical stresses (i.e. aggressive cleansing products or environmental stresses).

To restore skin ecosystem balance with AECTive®, the guardian for skin microbiota able to interact directly with the microenvironment around the skin microflora membrane, balancing and improving the correct water content inside and outside our commensal bacteria.

CONCLUSION

Healthy skin is the result of a gentle approach that begins with skincare and above all, with the use of the right active ingredients that can promote and strengthen the skin barrier, helping our skin to perform its natural function.

ROELMI HPC has a vision of the skin as a dynamic ecosystem and thanks to its technologies it is able to develop

sustainable ingredients that respect skin physiology, providing the support it needs to defend itself against exposome.

REFERENCES

- Use of the “Exposome” in the Practice of Epidemiology: A Primer on –Omic Technologies, D. Gayle DeBord*, Tania Carreón, Thomas J. Lentz, Paul J. Middendorf, Mark D. Hoover, and Paul A. Schulte
- Changes of the human skin microbiota upon chronic exposure to polycyclic aromatic hydrocarbon pollutants, Marcus H. Y. Leung¹, Xinzhao Tong¹, Philippe Bastien², Florent Guinot², Arthur Tenenhaus³, Brice M. R. Appenzeller⁴, Richard J. Betts⁵, Sakina Mezzache², Jing Li⁵, Nasrine Bourokba⁶, Lionel Breton², Cécile Clavaud² and Patrick K. H. Lee¹
- The skin aging exposome–Jean Krutmann, M.D.a*, Anne Bouloc, M.D., Ph.D.b, Gabrielle Sore, Ph.D.c, Bruno A. Bernard, Ph.D.d, Thierry Passeron, M.D., Ph.D.e,f

