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Phœnix rebirth

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Microbiota-world: how to swim in a sea of definitions

KEYWORDS: Skin microbiota, Microbiome, Pre-, Pro-, Post-biotics, Skin ecosystem, Key player the microbe.

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WEATHER FORECASTS FOR TODAY: CLOUDY

We have been living on our beloved Earth ecosystem since several hundred thousands of years, populating it and modifying it following our taste.

Have you ever imagined yourself not only as a small point in a huge planet, but also as a whole world for someone else? Well, what has become the main hot topic in the past years is that… we have billions of inhabitants not only inside but also outside our body! To them, we are the perfect ecosystem in which they can reach their harmony.

This population of microorganisms is our Microbiota and is only in the last few years that the one on our skin started to play a key role in the Personal care market, where there has been an exponential growth of cosmetic products claiming to balance or restore our microbial community.

The micro-world focus is related not only to new product launches: it has carried as well with itself a cloudy situation regarding definitions. The most common uncertainty is about the meaning of Microbiota and Microbiome. Could they be easily interchanged? Do they relate to the same concept?

Moreover, the cosmetic field showed a real interest requesting more innovative raw materials claiming "good for microbio-ta / -me". In order to satisfy this need, raw materials manufacturer started to include in the market a whole new category of ingredients. We often find these substances on the packaging of the finished product claiming an added value to the formula, such as "prebiotics inside", "with probiotics" or "postbiotic complex" and so on. The tricky question here is: is the end user aware of the differences among those? most importantly: are all the stakeholders and the companies involved in production aware? Is there a unique common definition? Just like we described in the Microbiota-Microbiome couple, there is some thin and not clear line here as well.

So… how can we learn to swim in this sea of definitions?

TOMORROW: LESS CLOUDS IN THE SKY

In Europe, some working groups have been established by different technical organizations with the aim of clarifying this situation and supporting regulatory departments. The latter ones in fact struggle to follow the market's speed, including the brand new *skin microbiome-microbiota* topic and the opportunity to use microorganisms in finished cosmetic formulas. ROELMI HPC is honoured to be part of one of these groups, offering its small contribution to cooperate with other stakeholders and find the best way to harmonize the different points of view from scientific community experts. The focus is to help to find a common definition for each of the previously named ingredients and concepts, but also to establish a guideline on how to use them in the cosmetic industry. ROELMI HPC likes to think that we are doing our part in spreading the word by sharing what we learn during these sessions and trying to transfer our knowledge to our customers and partners. The goal is to help them giving the right tools to correctly elaborate claims about products that will be placed on the market.

First, let us discover together the suggested difference between Microbiota and Microbiome:

- **Microbiota**: is the set of all microorganisms (bacteria, fungi, archaea, microalgae etc …) present in a defined environment, such as human body or individual body sites, like the skin or the digestive tract. (1)
- **Microbiome**: refers to a microbial community living in a well-defined habitat with distinct physio-chemical properties. The microbiome refers also to microorganisms' activity: this includes their genetic material, structural molecules, enzymes, membrane lipids or polysaccharides. (1)

Watch the video

Indeed, a different definition must be considered when talking about the microorganisms limited to our skin:

Skin Microbiome: is present on the whole skin surface, including areas like the scalp, pilosebaceous follicles or sebaceous glands. The composition of the skin microbiome is dynamic, site-specific but also differs from individual to individual. (2)As you can see, the Skin ecosystem is unique, like our fingerprint, and it is our mission to take care of it. How can we do that? By using personal care products containing raw materials specifically studied and developed to promote our Skin microbiota well-being. The cosmetic approach will be focused on innovative formulas that take into consideration firstly the key interaction between preservative systems and our commensal microorganisms, then, last but not least, the introduction of active ingredients with proven efficacy of rebalancing or preserving our skin microflora.

Let's now jump in another tricky synonymous-like definitions: they seem similar but they have huge differences…

- **Probiotics**: viable microorganisms added to a cosmetic product providing a benefit to the host where topically applied. (3
- **Postbiotics**: inanimate ingredients of microbial origin, such as cells or cell fractions, metabolites, filtrates of a fermentation etc., added to a cosmetic product providing a benefit to the host where topically applied (4).
- **Prebiotics**: substrates (like carbohydrates or other nutrients) added to a cosmetic product to be selectively utilized by the host microorganisms, providing a benefit to the host where topically applied.

Note that this category is not necessarily linked to the microbial origin of the ingredient, it relates to a functionality. (5) It is easier than it seems, we can guarantee! It only takes a deep reading and a bit of practice.

The most interesting thing to highlight from these definitions is an upgrade for the cosmetic industry. Until now, cosmetic formulas contained specific substances that could support Skin microbiota; now microorganisms are no longer the final target used in claims, they are an ingredient that can be voluntarily added in a finished product. Moreover, an essential one, if we want to target a healthy-skin ecosystem, giving the possibility to the skin inhabitants to interact directly with a similar structure. This active interaction could be the key to have a direct cross-talk with skin ecosystem, promoting long-term skin well-being and preventing skin disorders that could bring the ecosystem in a condition of dysbiosis.

In case you are curious, we have the suggested definition of this too:

- **Microbial dysbiosis**: an imbalance in the resident microbial population changing the natural healthy balance of the ecosystem, possibly leading to skin disorders (6).

THE FUTURE IS SUNNY!

For sure, thanks to the highly scientific contribution of all the stakeholders, the previously suggested definitions will find in the next future their coherent and widely accepted version for our industry.

You might have noticed… it is a hard work! For all of us: cosmetic companies, retailers and end users. Luckily, we are covered by dedicated scientific entities that will give us indications and advices to stay afloat and to not drown in the huge sea that is the micro-world. Do not miss our next articles to stay updated and join the micro-world addicted family!

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