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50 shades of skin microbiota

KEYWORDS: Skin microbiota, microbiota-friendly ingredients, preservative system, healthy skin, microbiota care.

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Abstract

A clear investigation on the interaction between cosmetic ingredients and skin ecosystem considering skin safety and efficacy of good-for-microbiota formulas. A preservative system is absolutely required for consumer safety; will it interact with probiotic-derived ingredients aiming at microbiota care? Discover our approach for a 360° consideration of our skin inhabitants.

TIME TO EXPLORE

Summer means sun, sea, relaxing, exploring, getting tan… but also working with more than 30°C in the office! Science never stops, so here we are once again talking about what has become the key word in the cosmetic world: the skin microbiota!

Speaking about the hot season, what happens when human skin is exposed to sun rays? A good sun care cream with SPF can make a difference and is absolutely required to protect the skin. What happens in real life is that sometimes it's difficult to obtain a homogeneous distribution on every part of our body. Consequently, some areas are more or less exposed to UVA and UVB rays, production of melatonin is differently modulated and, even without noticing it, we develop 50 (or more) shades of coloured skin on our body.

That is more or less what our microbiota is like: it's part of the same ecosystem, with huge differences within each body parts. As an example, there are specific locations with a unique microflora: gut, skin, scalp, oral and vaginal environments are simply so characteristic that their inhabitants are distinctive. Every district, were microbes live, is a balanced complex ecological system.

It also varies with skin regions: sebum rich, moist and dry areas are naturally different in chemical composition, therefore they attract different microorganisms.

In addition, like we were told as children, each of us is a different human being and we are unique... that is precisely another source of variability for microbiota! Also, are we the same person of that age? Precisely, time and ageing is another huge factor to consider. Our microbiota is in fact composed by transient and resident microbes; the former can grow because of particular condition: diseases, seasons, etc; the latter are what we can consider our real personal microbiota.

So... 50 shades? Or should I say thousands?! There's endless possibilities!

DOUBLE APPROACH

Let's now dive into a more specific segment, the one that is more related to the cosmetic industry: the skin microbiota. Human skin is a big and complex organ and, just like any other, it needs care and protection with a 360-degree view.

How can we achieve this goal?

Following the example mentioned before, protection against external factors is key – no matter if it's UV rays, pollution, physical damage, unhealthy lifestyle, smoking etc. A prolonged exposure to these conditions leads to an unbalanced skin ecosystem and visible consequences like wrinkles, irritations, rashes or, worst case, skin diseases.

This is one side of the coin. Taking care is the other.

It's only by using cosmetic products in harmony with our skin microbiota that we can strengthen it and therefore give meaning to our efforts.

In this context, ingredients that work specifically in favour of our micro-world can make a difference.

What kind of ingredients? Those meant to restore, rebalance, empower, support, improve or maintain in health our delicate skin ecosystem.

Market analyses highlight that there is an exponential growth of products launched claiming to be "microbiota-friendly" and/or including ingredients like prebiotic, postbiotic etc.

In our previous article (1) we discussed definitions and differences among these categories, in order to have a clear idea and speak the same language. The regulatory conditions are not ready yet and in this case the market is going faster, but in order to claim that a product is "good for microbiota" it should at least be supported by scientific data.

But... is it enough?

KNOWING THE TOOLS

A cosmetic product is composed by different types of ingredients, among them: functional, active ingredients and the preservative system to protect it from spoilage.

Watch the video

Speaking about the hot season, what happens when human skin, and microbiota too, is exposed to sun rays? How can we achieve a 360-degree microbiota care even during this particular 'exposition period'? Discover more!

Functional ingredients are the sensorial core of the formula, they enhance the skin feel and can lead the choice of the end user that prefers one texture or another. Their percentage-in-use is really high, giving formulators a tool to build up their formulations. As their primary action is emollient, they should not interact that much with our microflora.

Active ingredients are used to characterize a finished product and give it a specific target. The same base cream with different active ingredients inside can be used to reach several clients' needs. They have a peculiar mechanism of action and thanks to their chemical nature they interact positively with our skin, in order to achieve the desired effect: hydration, brightness, energy, nutrition and lifting are just some examples.

There is still no defined line from the regulatory point of view, but "microbiota-friendly ingredients" could be included in this category. Each ingredient is different and has its own mechanism of action, in general what could be good for our microflora is: a prebiotic effect that can feed the inhabitants of our skin, but not the potential pathogens; maintenance of system's biodiversity; improvement of its defences.

Last but not least, the preservation system that every formula needs to assure its safety for the end user. With the introduction of substances presenting an antimicrobial activity, colonization by pathogens is avoided and clients are protected from infections or other negative consequences of using a contaminated cosmetic.

Because of their chemical nature, they usually inhibit the growth of microorganisms. It is then logic to wonder… could they interfere also with the microbes composing our skin microbiota?

A number of studies tried to give an answer to this complicated question (2): the variables are uncountable and there is not a unique solution or a specific protocol that can assess this and at the same time can include every single molecule in the world.

However, evidences from different studies could lead to the conclusion that our skin microbiota is such an expert in contrasting external agents and finding its own balance that small amounts of preservatives (usually their percentage-in-use is around 1% or less, depending on the chosen substance) in a finished cosmetic product won't disturb that much its *eubiosis*. As mentioned, this cannot be valid for all the preservation systems present in the market, but only for the one that has been tested specifically for this purpose. Briefly, there should be no significant dissimilarity between untreated and treated.

We can now connect the dots.

How can we achieve a 360-degree microbiota care?

The choice of the specific active ingredients and simultaneously the inclusion of a preservation system that won't interfere negatively with our little skin inhabitants: that's the perfect combination!

CONNECTING THE DOTS

Healthy microbiota means healthy skin. We discovered a new ecosystem, a new part of our body and we need to take care of it, just like we do with others.

Prevention of skin diseases and protection from external factors are daily activities that make a difference in terms of life quality. The goal is to maintain our microbiota in its natural condition; a lasting modification can be, in fact, a sign of *dysbiosis* and disease.

The other smart card that we can play is choosing cosmetics that are scientifically proven to respect the skin inhabitants and do not affect the intactness of their environment.

Now that you have the right tools… let's build-up and empower all the 50+ shades of your skin ecosystem!

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