

The importance of personal care preservation

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Valued at € 78.6 billion at retail sales price in 2018, the European cosmetics and personal care market is the largest in the world (1) and seems to be not affected by any economic crisis. The vast majority of Europe's 500 million consumers use cosmetic and personal care products every day to protect their health, enhance their well-being and boost their self-esteem (1). Every year new and more and more performing finished products are launched on the market, ranging from skincare, fragrances, make-up, oral care products to haircare, toiletries, sunscreens and wet wipes – we could spend hours listing all different types of Personal Care finished products.

To reach the market, a finished cosmetic product does not only need to be performing and appealing: first of all it has to be **safe**. Let us bear in mind that the majority of Personal Care products are applied daily, or even more times a day, on our bodies, thus safety is more than essential! What is needed to launch a performing, appealing and safe finished products in 2020? One could say innovative functional ingredient, one could focus on naturally derived raw materials, one could prefer inventive active ingredient giving the product a specific function. Me? I would say **Preservative!**

WHY DO WE NEED PRESERVATIVES IN COSMETICS

The majority of cosmetic formulas copes with the microbial contamination nightmare. Several factors can lead to finished products' spoilage: skin microflora, hygienic condition of the production plan, certain sources of raw materials, type of product's usage, etc. In cases where the application of "Hurdle Technology", i.e. high process and/or low storage temperature, acidity increase, water activity and/or redox potential reduction, selection of specific packaging type, etc. (2), cannot secure microbial safety, here come preservatives!

Everywhere we have water, there is a good situation for microbes to proliferate, if we consider that the majority of cosmetics are mostly based on water, and that we do not live in a sterile environment, it is easy to understand why preservatives are so essential in Personal Care formulations.

WHAT ARE PERSONAL CARE PRESERVATIVES AND WHY ARE THEY IN THE EYE OF THE URRICANE?

Preservatives are natural or synthetic ingredients designed to ensure the safety and quality of products by protecting them against the growth of microorganisms during storage and consumers use (3).

To be effective as antimicrobials, preservatives need to have a good activity against cells. As a consequence, great concern arises about their potential adverse activity against the cells of human body – skin and mucous membranes. This is one of the reasons putting constantly preservatives in the eye of the hurricane. It is logic and rightful to wonder if the antimicrobial activity against microbial cells, can be exerted on eukaryotic cells as well. To answer the question, and reassure end users on preservatives safety profile, we can count on the European Cosmetic Regulation 1223/2009 and on the activity of SCCS (Scientific Committee on Consumers Safety).

First, preservatives are regulated in the Annex V of the Regulation 1223/2009, thus Personal Care producers have at their disposal a positive list, recording all admitted molecules to be used to protect products from microbial spoilage; this list also indicate how to use preservatives – dosages and specific restrictions – so that their safety in finished product is always guaranteed. In addition to this, the SCCS technically supports the European Commission by providing risk assessments and scientific advices on cosmetic ingredients, obviously including preservatives. Thus, as long as preservatives from Annex V are accurately dosed in cosmetic formulations, we can all sleep peacefully: no adverse effect on our skin could come from preservatives included in finished products.

HOW TO PROPERLY USE PRESERVATIVES

As mentioned above, in Europe, beside the Regulation on Cosmetics, we also have a dedicated positive list (Annex V Reg. 1223/2009) that includes nearly 60 ingredient to be used to preserve Personal Care formulations. How to select and dose the proper one for each different cosmetic preparation? Of course, not every preservative is suitable, safe and effective in all cosmetic formulations. To select the proper one, several factors must be considered.

First of all, the preservative has to be compatible with the formulation – pH, solubility, possible interference with other ingredients. Second, it can be hard to find a single molecule, which is simultaneously effective against bacteria yeast and mould; thus, in the majority of the cases, it is better

to combine two or more preservatives to obtain a broad spectrum antimicrobial efficacy. Finally, about the dosage: it is true that Annex V indicates for each entry the maximum authorized dosage, but, in some cases (especially when in combination with others), the synergistic effect makes preservative effective also below their maximum authorized dosage. It means that, as it is for all the ingredients of a Cosmetic formulation, also preservatives must be dosed according to results of empirical trials.

PRESERVATION TODAY: A POSTCARD FROM THE PERSONAL CARE MARKET

Despite, on the basis of the above, the need of preservatives in cosmetics is undeniable, it is at the same time true that this class of ingredient is undergoing what experts defined a “crisis period”: several factors have caused the decrease of accessible and usable molecules to preserve cosmetic formulas. Great pressure came from the use, just recently clarified by the Official Technical Document (July 2019), of “Free From” marketing claims, that often were unfair and denigrating preservatives. Additionally, this class of cosmetic ingredients face several regulatory restrictions/bans. Last, but not least, the non-scientific-based marketing demonization of certain preservatives – parabens are a glaring example! – also contributed to the crisis period we just mentioned.

According to EFfCI (European Federation for Cosmetic Ingredients) data, among the nearly 60 active entries of Annex V, only nine remain available for the preservation of the whole Cosmetic formulas (4).

In brief, the cosmetic field faced a decrease of available preservative choice and, globally, a restricted number of molecules are today used to preserve a much bigger variety of Personal Care formulations. This, like a dog chasing its tail, does not support the safety of finished products: reduction of available preservatives means a possible risk of overexposure to the few of them still “usable”. According to one of the most important principle of toxicology, the toxicity of a molecule does not lie in its chemistry, but in the concentration it is used. What will happen if the few remained available preservatives will start to get problematic because we are overexposed to them? What will we use then to preserve our beloved cosmetics?

PROPER COSMETIC PRESERVATION AS THE FOUNDATION OF SUCCESSFUL PRODUCTS

In the Personal Care field, safety should be the first parameter for placing products on

the market; of course, the product also has to be performing and appealing. Preservatives are the foundation of cosmetic safety: "no preservative" means higher potential of microbial spoilage, and thus a product instable and not safe. As it is for the higher and most innovative of the skyscraper that needs to be built on good foundation to be stable, in the same way to develop successful cosmetic we need to start from the basics: only properly preserved formulations will maintain their stability, and can be added with powerful and innovative functional and active ingredients, to become also performing and appealing.

Here comes the successful 3.0 cosmetic product! The "perfect preservative system" has to be selected according to scientific and ethic criteria. First: ingredient quality can make the difference! Purest molecules allow good efficacy, lowering the dosage; at the same time purer often means safer. Second: union makes strength! It is well known that synergistic effects can occur between

preservatives and other cosmetic ingredients; thanks to these effects, it is easier to reach a broad spectrum of microbial protection, while decreasing the amount of needed preservative. Finally, quantity counts! In preservation, the tendency "as much as I can" is quite common, but totally no sense: the right dosage, as it happens for other cosmetic ingredients has to be decided following experimental evidence of efficacy.

REFERENCES

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