EIGHT MYTHS

Natural cosmetic preservation | When developing green cosmetics, green preservation is also always a must in the formulas. There are some myths that Barbara Olioso would like to debunk and share.

Barbara Olioso,
MRSC, The Green Chemist Consultancy, Wells, UK,
https://thegreenchemist.com

How does green conservation work? Here are the eight most common myths:

1. Vitamin E is a preservative
Tocopherol or vitamin E is a good antioxidant used in food and also cosmetics thanks to its antioxidant properties. It is a radical scavenger therefore it helps to prevent oxidation and rancid smells from unsaturated natural ingredients. This activity has no beneficial impact whatsoever on the microbial content.

2. Ethylhexylglycerin is natural
Even if this ingredient contains glycerine in its molecular structure, a common naturally derived ingredient, it is completely synthetic and comes with a ISO 16128 naturally derived index of zero. But this ingredient is often used as an emollient and as an antimicrobial booster by weakening the microbial walls allowing preservatives to penetrate more easily so they can be used at lower concentration.

3. A 100% natural product does not need a preservative
This addresses two beliefs, one about natural equals safe and the other about all preservatives being synthetics. Natural products can still be prone to microbial spoilage on top of toxicology screening still needed for natural ingredients. This means you need a preservative system for natural products. To retain the 100% natural product position, there are a lot of substances on the market that can be used to build an effective and green preservative system.

4. Hydrolats are self-preserving
Hydrolats or floral waters are a by-product of essential oils distillation, common ones are rose, neroli and hamamelis. They smell really nice and add interesting soothing properties to cosmetic formulations, however even if they may start with a low microbial count because of the way they are produced, once opened they can still be prone to microbial contamination due to their high-water content. This means you

photo: Zwiebackesser/Shutterstock.com

cannot rely on the smell to assess the microbial quality but to have a suitable preservative system added or other strategies to prevent contamination.

5. Products in airless bottles do not need a preservative system

Airless bottles are convenient to use and have the additional benefit of having no headspace on top of the product, preventing, in theory, contamination from airborne micro-organisms. However, the pump design is rather critical to truly prevent air from coming into contact with the product. Not all airless are designed with such objective in mind. Even if the potential for contamination is low, there is still the need for a preservative system.

6. Essential oils are natural and effective preservatives

There are studies showing antimicrobial properties of essential oils. They are rather tricky to use for this application in cosmetic products for several reasons: their composition and therefore their antimicrobial activity varies from batch to batch, they have a strong odour, and they contain allergens. They could be used more like antimicrobial boosters rather than key players in a preservative system, so that there is more flexibility on the scent and allergen content.

7. 'Natural' or 'organic' preservative systems break down faster

Over the years, the range of green chemistry ingredients with antimicrobial properties has been growing a lot to the point you can now even find benzoic acid, a preservative in Annex V, from plant sources. This is because the demand for green and safer preservation has been steadily growing. Historic green brands have been at the forefront of using them, developing the know how to use them safely and effectively for over twenty years. In tests on the effectiveness of preservatives in products, they were preserved with such multifunctional agents and stored for over 30 months – and they passed with flying colours. If one experiences, the formulation break down much faster than other ones it probably means the product was not formulated appropriately or manufactured in poor hygienic conditions so that the preservative got all consumed.

8. A good preservative system is the only prerequisite for a safe product

That would be nice, but it is not true. A preservative system is not a magic wand that can make all bugs disappear. The preservative system is more part of a general strategy made of several key players, from Good Manufacturing Practise (GMP) to good packaging and ingredients selection, strategic testing etc. □