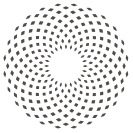
CODEX
BEAUTY LABS

Chapter: Plant-Based Preservative System

Sections



01. WHY DO BEAUTY PRODUCTS NEED PRESERVATIVES?

Beauty products need to be preserved to prevent microbiological growth that would make the product unsafe. Products that contain water are especially vulnerable to the growth of microorganisms such as bacteria, molds and yeasts. For that reason, a broad-spectrum preservative, one that's effective against the full range of microorganisms, is required. Preservatives perform a dual function: they reduce the number of microbial contaminants present in a product while also inhibiting the growth of new contaminants.

02. WHAT TO CONSIDER WITH CONVENTIONAL PRESERVATIVES

In conventional beauty products, parabens are a commonly used class of preservatives. Studies, however, have raised concerns about their potential negative health consequences. Parabens, for example, are believed to be easily absorbed through the skin and have been shown to exhibit estrogenic activity that may be linked to tumor growth associated with certain forms of breast cancer. Questions still remain about whether parabens are, in fact, harmful to those applying them onto their skin, though. Another popular class of preservatives are those known as "formaldehyde releasers," examples of which include quaternium-15, hydantoin and various types of ureas. These preservatives have the ability to release formaldehyde into the product, thereby preserving it. Unfortunately, not only is formaldehyde a known carcinogen, it also has a tendency to cause allergic contact dermatitis and skin irritation.

03. NOT ALL NATURAL PRESERVATIVES ARE CREATED EQUAL

Traditionally, natural skincare relies on the use of weak acids and alcohols as preservatives. Weak acids such as salicylic, benzoic, sorbic, levulinic, and others are considered to be natural alternatives although they are often made synthetically. Alcohols, such as benzyl alcohol and phenoxyethanol, are effective but can be sensitizing. Many of these ingredients are prevalent in natural skincare despite being synthetic materials.

04. CODEX'S BREAKTHROUGH PLANT-BASED PRESERVATIVE SYSTEM

At Codex we pushed ourselves to create a natural, certified EcoCert Organic preservative system that would be tolerated by even the most sensitive skin types while at the same time effectively preserving our products.

We trialled numerous blends of various plant-based acids, fermented extracts, essential oil extracts and more until we developed the perfect pure and natural broad-spectrum preservative system. This proprietary, patent-pending preservative system is based on a blend of probiotics created by the fermentation of Lactobacillus.

Lactobacillus is one of the species of microorganisms used to produce fermented foods such as sauerkraut and kimchi. Like many other members of the lactic acid bacteria family it can restrict the growth of other microorganisms by making its environment acidic. It also produces antimicrobial peptides called bacteriocins that provide broad spectrum protection.

We further enhanced the antimicrobial activity of our preservative system with the use of coconut oil, which has antifungal, antibacterial and antiviral properties. Its medium-chain triglycerides, such as lauric acid, have antifungal activity based on their ability to disrupt the cellular structures of fungus. Coconut also helps moisturize and condition skin.

Next, we added potassium sorbate, a well-known mild preservative often used in the food industry. It is the potassium salt of sorbic acid, which was originally isolated from rowan berries. It has good activity against yeast and molds.

And finally, we relied on a pure and plant-based, petroleum-free propanediol which allows us to reduce the amount of other preservatives used in the formulation. It also imparts humectant benefits that help skin retain moisture and has an excellent feel on skin. It's derived from sustainable, renewable corn fermentation processes.

05. PUTTING OUR PRESERVATIVE SYSTEM TO THE TEST

To ensure that our preservative system works effectively, we use a microbiological challenge test or Preservative Efficacy Test (PET) carried out by a lab. This test is performed several times during the development of the products, in order to demonstrate the preservative antimicrobial effect and product safety. During the test, scientists inoculate a product with a mixture of bacteria, yeast, and mold, then measure the levels of the microbes over time, typically 28 days. If the number of microorganisms in the product does not fall to acceptable levels, the product fails the PET and will not go to market.

06. WHEN WE SKIP PRESERVATIVES ENTIRELY

All beauty products that contain any appreciable amount of water require preservation in order to be effective. Not all of our products contain water and so these anhydrous products do not require preservatives. What they do require, though, are effective antioxidants, as oils and butters can go rancid. We ensure that all of the botanical oils we purchase and use in our products are stabilized with an antioxidant such as vitamin E. Then we add both vitamin E and a special rosemary antioxidant ingredient to all of our anhydrous products.

We also take into consideration that some of our anhydrous products will come into contact with water when being used, for example, an anhydrous body scrub being used in the shower. Because water can get into the container and create an environment for microbial growth, it's important to add in preservatives.

07. THE SHELF LIFE OF PRODUCTS WITH NATURAL PRESERVATIVES

Natural antimicrobials and antioxidants can be combined to protect and extend the shelf life of products, but they will never match the extended shelf life of conventional synthetic preservatives. The typical shelf life of unopened conventional skincare products is approximately two years from the date of manufacture, for example. Natural products, on the other hand, have a shelf life of approximately six to eighteen months. By utilizing "good manufacturing practices" (GMP), however, coupled with airless packaging, the shelf life of Codex's products rivals that of conventional skincare products.

Yet another way of determining a product's shelf life, and the one that Codex prefers, is looking at the interval of time "after opening" the product. Products utilizing this method typically have a symbol on the product, such as an open jar, together with a number and the letter M (for example: 6M). This represents the number of months the product is good for once opened. We believe this method of identifying a product's shelf life better reflects the actual usage period of a product. Today, consumers are more aware of this issue and know to be skeptical of much longer shelf lives.

08. WAVE OF THE FUTURE

Consumers are becoming much more aware of preservatives and they are demanding safer products. New developments in the field are also being uncovered every day. For example, a recent study found that flavonoids, naturally found in plants, can be very effective as food preservatives. Researchers discovered that by implanting a flavonoid-producing mechanism into baker's yeast, it produced flavonoids with high antimicrobial properties, which are not even present in pure flavonoid samples extracted directly from plants. It's exciting to see scientists turn to plants for breakthroughs, and we at Codex, are proud to be at the forefront of natural preservatives in beauty products.

SOURCES:

Cosmetics Preservation: A Review on Present Strategies, N Halla, et al.,

Artificial Preservatives And Their Harmful Effects: Looking Toward Nature For Safer Alternatives, S. Anand and N. Sati, Int J Pharm Sci Res 2013: 4(7); 2496-2501. doi: 10.13040/IJPSR. 0975-8232.4(7).2496-01.