



Covid-19 Pandemic: Future of The Waterless Formulations

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Minireview

Today, many cosmetic products that we use for personal care and hygiene are kept in plastic packages. This situation leads to the formation of a large amount of plastic waste due to these cosmetic products, which are widely consumed around the world, and creates a negative effect in terms of global climate change. Due to the Covid-19 pandemic, which started in 2019 and is still in effect, there has been intense interest in personal care products. The excessive consumption of cosmetics that we keep in plastic packaging has of course increased the amount of plastic waste significantly. In order to prevent this situation, cosmetic companies give priority to various research and development studies and support their acceleration. Due to the increasing consumer demand after Covid, solid cosmetics that are not deformed and completely devoid of water come to the fore in the hygiene category. Solid shampoos, shower gels, and toothpaste initially gained prominence by small independent brands with a natural and organic profile, then became a trend followed by mass-market giants. Anhydrous formulas account for 5% of the cosmetics market in Europe, and this ratio is expected to increase gradually, according to forecasts.

As an important driving force, the Covid-19 pandemic will also accelerate the development of new formulas in cosmetics by changing consumption habits. To accelerate innovation in this area, the Effervescence agency will partner with Tectic to launch the STAR (Solid Technical Accelerator Responsible) Cosmetics Program. The aim is to create a market in this segment, coordinate the market to discover and analyze trends, scientific and technical challenges and inspire opportunities and insights regarding solid cosmetics.

In addition to the pandemic, the interest in solid form products has increased due to the Zero Waste Project, the Clean Beauty trend and the increase in nomadic life, which has been on the agenda recently.

Today, with the effect of the increasing population, water consumption has increased, and it has been predicted that the resources will not be sufficient. Oceans make up 97% of the water on Earth. Only 3% of all water in the world is fresh water and only 1% is easily accessible for human use. Two-thirds of the world's population may be at risk of water shortages by 2025, WWF reports. With the awareness of consumers of personal care products, cosmetic brands will accelerate their efforts to reduce water dependency in their products and develop waterless formulas [1].

The interest in water-free cosmetics and personal care products, especially by young people, has reached a significant level. Around 25% of young people in the UK use solid shampoos, solid bath and shower products, compared to 30% in France. Consumers tend to prefer anhydrous formulas when they experience that they perform the same function as conventional formulas. Cosmetic companies, on the other hand, are working on sustainability to protect water and develop waterless formulations. While cosmetic brands in America and Europe show interest in waste-free and sustainable concepts, consumer interest is increasing worldwide [2,3].

For consumers who have adopted the on-the-go lifestyle called "Transumer", products in waterless format are preferred because they are travel-friendly, easy to use, effective and sustainable. Cost-effectively, the anhydrous formulations are more stable and less

prone to microbe growth, thus potentially reducing the amount of trials required. As the products are more concentrated and lighter, their handling and transportation is easier. Products containing less or zero water, such as solid shampoo and stick deodorant, do not cause any problems while passing through airport security screening [4].

Water is both an affordable and neutral ingredient. With these properties, it can be added to almost any product without causing skin reactions. Most beauty products contain 70-80% water. That's because water is known as the "universal solvent", meaning it dissolves more substances than any other chemical. It is also among the advantages of water that it can extract other water-soluble compounds in the formula and create a creamy texture by emulsifying the oils. Although it is stated in some cosmetics that the water content is provided by rose water or aloe vera gel, these substances also have a water content of 95-99.5%.

Water, which causes the dilution of the formula, also reduces the effectiveness of the products. At the same time, water supports the growth of microorganisms, so preservatives must be present in order to increase the shelf life of products containing water. In addition, although water may seem like a moisturizing component, in fact, the evaporation of water reduces the moisture of the skin and hair, and the natural and essential oils on the skin surface are removed from the skin. With the evaporation of water, the skin reacts to synthetic emulsifiers, essences and colorants, causing acne formation, skin irritation and inflammation.

Formulations with water content can be harmful to the environment as well as having a negative effect on our body. According to the data, there is more than 8.3 billion tons of plastic waste on earth. The personal care industry has the largest share of overpacked products with multi layered plastic and mixed-materials packaging, which are often difficult or non-recyclable. Adding water to products as a filler reduces the overall effectiveness of the product. The product with low efficiency requires more consumption amount. Excessive consumption of the product increases the amount of packaging and creates more water pollution.

The concept of "waterless beauty" first started in South Korea and gained attention in the West in 2015. Waterless beauty can take a variety of forms, including cleansing balms, concentrated body oils, masks, and pressed serums, and includes skin care, hair care, and makeup [5].

Although waterless formulas are thought to be more sustainable, this is not a complete solution. "Water is involved in all stages of a product, from harvesting and processing the raw materials to formulation, finishing, packaging, shipping and consumer use," says Sarah Jay, creator and founder of the documentary Toxic Beauty. All Earthlings, an organization that aims to improve transparency in cosmetics supply chains, says, "When we consider these facts, there is no such thing as a waterless beauty product."

The transition to cosmetic products that contain less, or no water is due to the logic that water is inactive. Anhydrous products can naturally preserve their formula and do not require additional synthetic preservatives. In this way, the negative effects of preservatives on humans such as immune system dysfunctions and reproductive disorders are avoided. Concentrated antioxidants are often used to keep the formulas of dehydrated products fresh and can provide extra benefits to the skin. Removing water from formulations provides more room for beneficial ingredients such as botanicals and essential oils and can reduce shipping costs and spend more on luxury, sustainable, organic or ethical ingredients. As a result, better quality and effective products emerge. Water-free formulas also have a higher concentration, meaning less application of the same amount of product for the same effect. In addition, it respects the nature due to less carbon footprint, reduction of plastic packaging waste and development of effective products [6].

Although the production of anhydrous formulas is easier; The Protective Efficacy Test (PET) is cheaper to test as there is no need to perform challenge and stability tests. It is attractive to consumers who tend towards 100% natural organic products or concentrated products without preservatives.

By changing our buying and consuming habits, Covid has created a permanent awareness of the damage that all these wastes cause to our world. There has been meaningful lasting changes in the way we manufacture and purchase the personal care products we use every day, and a growing awareness of sustainability. Waterless beauty has become a necessity, not a trend or a fashion.

The problem of maintaining accessible and usable fresh water is an important issue that needs to be addressed, and the cosmetics industry should take responsibility for developing innovative products to solve this problem.

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Conflict Of Interest

No conflicts of interest related to this article were declared by the authors.

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