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Critical Analysis 2

### **The Science Behind Skincare**

Oftentimes when we think of beauty products some of the first things that come to mind might be makeup, skincare, facial masks, nail care, body washes and hair care, but what is it that makes these beauty products work the way they do? Right off the bat when we think of beauty, we start thinking of beauty products to help cover up blemishes, enhance our features, or help with dry or oily skin, but there is more to beauty than the classic red lipstick or water-based moisturizer. The key behind these beauty products and their function lies in what ingredients they are made of and how. Science plays a huge part in creating these products and making sure a product does what it is supposed to do, depending on what that is. Throughout time, the use of science has expanded and there have been new techniques that have been discovered and used in making different kinds of beauty products. The improvement of science and technology has contributed to making products with safer and “cleaner” ingredients while still seeing results as opposed to years back.

There have been different scientific advances that have allowed for product development in the beauty industry, one of them has been the use of chemical exfoliators rather than physical exfoliators. Exfoliation is the process of removing the dead skin cells from the skin and can be done on the face but on the body as well. There was a period of time when the most popular way of exfoliation to unclog pores were physical exfoliators which were usually made out of small grainy particles, and they were used by being rubbed onto the skin to reveal a softer and glowy appearance. One of the most popular physical exfoliators on the market was the St. Ives Fresh

Skin Apricot Scrub that gained popularity on social media for leaving your skin soft and smelling good. Although this product was popular, it was then declared as problematic and abrasive since it was said that instead of benefiting the skin, it was harming it due to microtears it left on the skin after use due to the small shell pieces it contained (Molvar, 2020). Another popular use of physical exfoliators included facial brushes with spinning heads and vibrations which was declared by dermatologists and aestheticians as harmful to the skin.

Due to the scientific advancement and understanding of chemicals, acids, and their properties, it has allowed for scientists and dermatologists to develop products that are not harmful to the skin, benefit skin concerns, are not abrasive, and can be easily used by the consumers. The creation of chemical exfoliators was one of the scientific advancements that has been created and used recently. As opposed to physical exfoliators, chemical exfoliators usually are made from alpha and beta hydroxy acids which have been classified as some of the safest and gentle acids that unclog pores and get rid of dead skin cells (Molvar, 2020). Before using any sort of exfoliating acid on your face, chemists and dermatologists suggest testing the product on your hand to make sure no irritation or allergic reaction occurs. They also recommend using these acids during the night rather than the daytime so there is no sunburn or photosensitivity. The outcome of understanding acid functions has allowed for the rising popularity of chemical exfoliators that have been developed and introduced into the market. Some of the most popular chemicals used in these exfoliators include alpha-hydroxy acids (AHA), beta-hydroxy acids (BHA), and a blend of AHA/BHA acids (Molvar, 2020). The use of alpha-hydroxy acids helps with the fading of dark spots, hyperpigmentation, and the evening out of rough patches on the skin. Products that contain glycolic acid, which is a water-soluble AHA acid that is made from sugar cane, are easily absorbed into the skin due to its small molecular weight of AHA which can

cause a spike in the production of collagen to improve skin texture (Molvar, 2020). Typically, it is better to start off with a lower percentage of glycolic acids and increase the percentage of strength over time. Beta-hydroxy acids are also very popular acids that are used for exfoliation of the skin. These acids are oil-based and go deeper into the pores than AHAs. The mixing of other chemicals with the BHAs like salicylic acid, which helps shed dead skin cells and decrease redness, makes the use of BHA exfoliators stronger since it penetrates deep into the skin to smooth it out and even out skin tone (Molvar, 2020). Products that contain both AHAs and BHAs work together along with any other added acids like glycolic, salicylic, and lactic acids to clear up the skin.

Understanding the functionality of different acids alone and together has allowed for scientists, chemists, and doctors to experiment with them to create new products that benefit the skin and eventually push them into the market. Now, there are various chemical exfoliators to choose from depending on your skin concerns, sensitivity, and even budget. Some of the most popular chemical exfoliants include the Drunk Elephant's T.L.C Babyfacial, the Omorovicza Acid Fix AHA/BHA treatment, Sunday Riley's U.F.O Ultra-Clarifying Face Oil, Murad's AHA/BHA Exfoliating cleanser and The Ordinary AHA 30% + BHA 2% Exfoliating Peeling Solution among many others (Beauchamp, 2022). All these products have gained positive reviews of people saying they've "noticed immediate results after use" as well as having smoother and more radiant skin. People have also claimed that these products have brightened up their skin, gotten rid of their acne and left their skin feeling renewed.

Today, some of the cutting-edge developments in beauty involve the use of technology, science, and chemistry all together. One of the newest developments includes the use of drug molecules that are used to prevent the aging of skin from sun exposure. Recently there has been

research and experiments conducted by professor Matt Whiteman from the University of Exeter Medical School and professor Uraiwan Panich from the Faculty of Medicine Siriraj Hospital at Mahidol University in Thailand, that have led to this discovery. Sunburn is known to be a huge cause for factors like premature aging and skin cancer, but research found that the use of two new molecules, AP39 and AP123 can help protect the skin. According to the research conducted by professor Whiteman and professor Panich, these molecules penetrated into the skin and corrected the production of skin cell energy and usage which “prevented the activation of skin-degrading collagenase enzymes” (University of Exeter, 2021). The molecules gave the effects of reduced inflammation and skin damage after conditions like eczema. They also prevented human skin cells from aging during experimentation. Professor Whiteman explains how the use of these two compounds penetrate the skin and target the mitochondria of these cells causing them to protect it which resulted in preserving the protective mechanisms that control inflammation, cell protection, and prevent tissue destruction (University of Exeter, 2021). Although the discovery of these two molecules does not guarantee the delay of skin aging it is a step in the right direction into a future where it might be possible to do as well as help reduce other skin conditions.

Overall, these new scientific advancements have allowed for new research to be discovered and tested as well as for new product development within the beauty industry. The beauty industry has come a long way thanks to these new scientific and technological advancements. The understanding of skin related topics has had a huge growth throughout these past years including the use of acids for skin exfoliation and the evolutions of anti-aging products and practices. Although science has come a long way with discovering new benefits for skin care, there is no doubt that there is still much more research to be conducted on other skin

related topics. So far, the new discoveries and research that has been conducted has given scientists a promising outlook on the future of the beauty and skincare industry.

## Bibliography

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