

THE ADVANCES OF BEAUTY AND SCIENCE

From natural ingredients that are easily accessible to communities, to chemicals that have modernized beauty, it is safe to say that field of science and chemistry has changed the way beauty products/tool have been formulated to make it safer for use. Though, some may argue that without scientific advances, the beauty industry wouldn't be as influential as it is today. Others may retort that natural ingredients have stood the test of time, so they may be more beneficial to the skin than modern chemistry. If we dive deep into the Asian beauty industry, we can see that many Korean and Japanese citizens used different natural ingredients such as mud, mugwort, snail mucin, etc. for their skin/makeup. So why do we disregard scientific advances in beauty? Scientific breakthroughs don't appeal to consumers – with the complexity that is science, it is hard for the average individual to understand what these breakthroughs did for consumers (Grubow & Morris, 2012). But without these advances, who knows what the beauty industry would've been today.

Aging and its side effects have become infamous in the beauty industry. Many consumers have bought products in hopes of preventing wrinkles, fine lines, etc. With the introduction of sunscreens decades ago, it has become a household product for many consumers. Though it wasn't always a product many people reached for. Mineral sunscreens approved by the FDA in 2019 were physical blockers, meaning that they didn't absorb into the skin. This however resulted in pasty white faces – causing people to not use them (Bain, 2020). Thus, scientists have formulated “micronized particles,” allowing the product to go smoother, especially on darker skin tones without the white film on the skin (Bain, 2020). Scientists have even taken it a step further and formulated sunscreens with tints and color. This meant that men and women were able to just wear sunscreen that acted as makeup – blurring imperfections without the actual use of makeup (Bani, 2020). And responses have shown that there has been a high level of interest

with consumers – making it a huge advancement for people who don't wear sunscreen (Bain, 2020).

Another huge development in the beauty industry that changed product formulation were antioxidants. It seems as though aging, and its effects have had a huge impact on why some product formulations change. The beauty industry has had a huge focus on DNA technology, with regards to the free radical theory (Brockway, 2020). Free radicals in our body which are unstable and reactive molecules with no pairings are called reactive oxygen species (ROS) (Amaral, n.d.). This ROS results in cellular damage to the skin and cancer (Brockway, 2020). Therefore, our bodies with the use of antioxidants, are able to manage damage caused from these reactions. The foods we eat such as fruit, have played a huge part in helping the free radicals internally. However, interest in antioxidants for cosmetic formulations has grown, and many skincare products now have added ingredients such as green tea and Vitamin C in their formulations. These formulations have helped repair the skin barrier and protect the skin from free radicals (Amaral, n.d.).

With regard to technological advances, many companies have looked onto AI and filters to advance selling beauty products and engaging consumers in them (MacLeman, 2021). Artificial intelligence (AI) has made it significantly easier for a consumer to purchase a beauty product without the hassle of returns. These programs are able to determine the best skincare regimen with a scan, or find the right foundation shade (MacLeman, 2021). A decade of research at places like Stanford University have even made it possible to use augmented reality so that clients are able to see the products displayed on their skin without actual application (Bose, 2018). While these breakthrough advances in technology have made it easier to decide on beauty/skincare products, it isn't always foolproof (MacLeman, 2021). However, these AI and

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smart device advances have become a huge step in making it easier for consumers to purchase products that will suit their needs (Bose, 2018).

Ultimately, we are able to see that scientific formulations and cutting-edge technologies have been able to advance the beauty industry. We've seen that sunscreen formulations back then weren't often used by consumers due to previous skin concerns. Now that science and chemistry have influenced the beauty market, these new products are able to work with the skin of many consumers. Therefore, individuals are more likely to buy. Without these advancements, the beauty industry may not be as influential as it is today. Thus, I do agree with the argument. Without these advancements, the beauty industry may not be as influential as it is today. As we can see, these advances will keep growing and the global beauty market will be currently set to be worth over \$24 billion by 2029 (Culliney, 2022).

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