

CHAPTER

3

WATER-BASED FORMULATION AS AN EMERGING ELEMENT IN SKIN CARE

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3.1 INTRODUCTION

Human skin acts as a barrier between the internal and external environments, protecting the body from mechanical damage, noxious substances, invasion by microorganisms, and radiation. Skin is the human body's primary defensive organ. It offers first-line defense against a variety of potential hazards in our environment. The skin plays an important role in regulating body homeostasis by keeping water loss to a minimum and by regulating body temperature. It also aids in body temperature regulation, vitamin D synthesis, and the production of some hormones. Skin health can have a substantial psychosocial impact on individuals as well as alter social interactions.

Furthermore, in many modern civilizations, skin quality has become a prominent signal of social worth. Skin is made up of very specific cells and tissues, and their collective purpose is to act as the boundary between “you” and “the world”. One of the neat things about skin that makes it different from a lot of other organs is the fact that it does have to deal with the real world. Therefore, it is loaded with sensors, and it

also has a very tough, layered design so that it can handle realities of the environment like abrasion and sunlight. With a total area of around 20 square feet, the skin is the body's biggest organ. The skin protects us from microorganisms and the elements, assists in body temperature regulation, and allows us to feel touch, heat, and cold (Hofmann et al., 2023). Figure 3.1 shows an illustration of the skin.

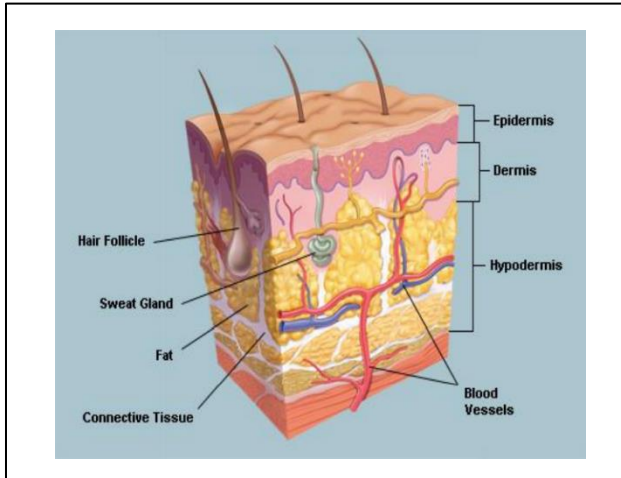


Figure 3.1 Illustration of the skin (Source: Hoffmann et al., 2023)

So, to protect our skin from damage, it is important for us to use skin care or cosmetics. Skin care encompasses a variety of procedures that help to maintain the integrity of the skin, improve its appearance, and alleviate skin disorders. According to the United States Federal Food, Drug, and Cosmetic Act, cosmetics are products intended to cleanse, beautify, promote attractiveness, or alter the appearance without affecting the body's structure or functions. Although some products, such as moisturizer sunscreens and anti-dandruff shampoos, are regulated under both categories, medications that are intended to diagnose, cure, mitigate, treat, or prevent disease or to affect the structure or function of the body (for example, sunscreens and acne creams) have their own category (Kottner et al., 2023).

An excellent skin care routine consists of four main components: Protection, prevention, cleansing, and moisturizing. Dermatologists urge daily usage of sunscreens since most sun damage is caused by incidental ultraviolet exposure rather than brief bursts when on vacation. Zinc oxide and avobenzone are the most active substances for blocking both ultraviolet A (UVA) and ultraviolet B (UVB). Sunscreens, which are classified as over-the-counter (OTC) medications, must pass rigorous safety and efficacy testing as well as meet demanding labeling standards. Since the 1990s, the FDA has not approved any new sunscreen actives, but advances in formulation chemistry and technology have enhanced sunscreen aesthetics, ease of application, and performance to encourage consumer compliance. Sunscreen should always be the last step in any at-home skin care routine (Ferreira et al., 2023).

In general, gel-based and bar cleansers are best for oily complexions, whereas cream or lotion-based ones are better for normal to dry skin (Blaak et al., 2023). Moisturizers contain humectant agents, which draw water from the environment and the dermis below into the stratum corneum. Occlusive agents, which function as a barrier to transepidermal water loss, are also found in moisturizers. Almost all products include both humectants and occlusives, such as hyaluronic acid, urea, and allantoin, as well as occlusives like petrolatum, mineral oil, and lanolin. Occlusives are found in the oil phase of a formula, while humectants are found in the water phase (Ainurofiq et al., 2023). Oil-in-water formulations are typically light gels, lotions, and serums that are excellent for normal to dry skin. Water-in-oil formulations can be in the form of ointments or creams, and they provide improved hydration to dry skin. The cleanser, moisturizer, and sunscreen that can be recommended to the consumer will be determined by their skin type, which might be normal, dry, or oily. Consumers should look for FDA-approved active or functional ingredients in their products based on their primary skin problem, concern, or goals (Olejnik & Goscianska, 2023).

Therefore, it is important to find a suitable skin care formulation that suits our skin. There are several types of formulations of skin care, such