



Skin care products: What do they promise, what do they deliver



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Abstract The industry offers a vast armamentarium of skin care products to clean, soothe, restore, reinforce, protect and to treat our skin and hence to keep it in “good condition”. Skin care products are readily available and their promotions with fanciful claims are omnipresent. The promotions are based on effects, evoked by actives that are delivered through vehicles that rely on specific technologies. Due to the fact, that these products are in direct contact to the target tissue, their vehicle and ingredients are able to profoundly modulate the characteristics of the skin and some of its functions. This makes products for the skin absolute unique and versatile delivery systems. This paper discusses the concept of skin care and skin protection, the choice of skin care products, their vehicles, their functionality and their regulatory status.

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1. Introduction

Our skin reflects our origin, lifestyle, age and state of health. Skin color, tone and evenness, pigmentation, as well as skin surface characteristics are signs of our skin’s health. The cosmetic and pharmaceutical industry offers a vast armamentarium of skin care products and procedures to clean,

soothe, restore, reinforce, protect and to treat our skin and hence to keep it in “good condition” [1,2]. Skin care products are readily available in daily life and they play a major role in health and nursing care. The promotion of skin care products including their claims are often based on an *effect* (e.g., moisturizing, antioxidant), evoked by an *active* (e.g., urea, tocopherol) that is delivered through a *vehicle* (e.g., lotion) that relies on a *specific technology* (e.g., nanotechnology). In addition “*without*” *claims* (e.g., without parabens) often accompany nowadays promotions.

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Some of the effects, actives, vehicles and technologies have become well-known. The pharmacologic, immunologic or metabolic effect of *medicinal products* – e.g., to treat hand eczema or acne – is assigned to an active pharmaceutical ingredient (API), e.g., corticosteroids, retinoids. It is common knowledge that the vehicle housing the API plays a crucial role in delivering the API to its target site. Unfortunately many assign the vehicle effect to its entirety (e.g., ointment, cream, gel) and not to the sum of ingredients forming the vehicle that remains on the skin after application (see section [Metamorphosis of the Vehicle](#)). Skin care products rarely house APIs but rather so-called *actives* or *cosmetic actives*. These products are classified in some specific cases as *medical devices* but in a majority as *cosmetics*. In all these cases, too, the vehicle plays a crucial role in unleashing an effect on the skin. This is due to the fact, that the target tissue is directly treated and the vehicle and their ingredients are able to profoundly modulate the characteristics of the skin and some of its functions. This makes products for the skin absolute unique and versatile pharmaceutical and cosmetic delivery systems.

Against this background we discuss the concept of skin care and skin protection, the choice of skin care products and their vehicles, their functionality and their regulatory status.

2. Concept of skin care and skin protection

The concept of skin care is not well defined. It is a kind of umbrella term covering cleansing, perfuming, changing appearance, changing body odor, protecting and keeping the skin in “good condition”. In the last decades our perception of skin care has broadened and soothing of skin symptoms/conditions, and improvement and restoration of the skin’s barrier function and integrity have been added. Today, modern skin care includes *cleansing, soothing, restoring, reinforcing* and *protecting*. With increasing age the emphasis on skin care is changing [3,4]. The importance of soothing, restoring, reinforcing increases and cleansing should be executed with particular care. The character of skin care shifts from more *cosmetic* objectives – smooth, healthy looking skin – to more *therapeutic and preventive* objectives – soothing, restoring, reinforcing and protecting stressed skin. Even though skin care and skin protection plays an important role throughout lifetime the *noxes* and the *skin areas in primary*

need of care and protection also change. In younger years environmental noxes (e.g., UV radiation) are of primary importance whereas in advanced years age-related noxes (e.g., prolonged exposure to various sources of moisture, including urine or feces, perspiration, wound exudate, and their contents) become more important. Subsequently the skin areas in need of care and protection also change – initially skin areas (e.g., face, arms, legs) exposed to the the external environment and later enclosed skin areas (e.g., skin folds, perianal, perigenital skin, groin, feet) become the vulnerable zones (hot spots) [5,6]. Ageing per se changes the skin structure and function across the life course increasing its susceptibility to numerous clinical relevant skin problems (e.g. xerosis cutis) [7]. Skin diseases (e.g., bacterial/fungal infections), accumulating effects of systemic diseases (e.g., diabetes mellitus, renal insufficiency) or pharmacotherapies (e.g., cancer therapies) also necessitate special skin care.

3. Skin care procedures and skin care products

The information on skin care procedures is plentiful but little scientifically documented and the number of products available for cleansing, soothing, restoring, reinforcing and protecting is of an almost infinite variety. Nonetheless their functionalities may be described as

- Removal of dirt, sebum, microorganisms, exfoliated corneocytes and other non-wanted substances from the skin
- Reduction of unpleasant skin symptoms (e.g., pruritus, burning, odor)
- Restoration of (subclinically) damaged skin (e.g., dry and inflamed skin)
- Reinforcement of undamaged but vulnerable skin (e.g., skin surface pH balance, germ reduction)
- Protection of damaged, undamaged and vulnerable skin from various noxes
- Providing a pleasant skin feel (well-being).

The functionality of the skin care products ranges from mono-functional, e.g., protecting barrier creams to poly-functional, e.g., soothing and restoring cleansers. They unfold their functionality as leave-on products (e.g., moisturizing or skin barrier products), or as rinse-off products (e.g., cleansers). Skin care procedures – washing/

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