

Dermocosmetic care for rosacea

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Rosacea is a chronic inflammatory skin disease that primarily affects the central area of the face; it is characterized by erythema, papules, pustules, nodules, and telangiectasia. This condition arises between 30–60 years of age, and it usually occurs in fair-skinned people. Rosacea is characteristic of sensitive skin, as it is a disease marked with punctuated phases of exacerbated signs and symptoms that alternate with periods of remission. Humans have long incorporated cosmetics in their daily habits; given the scientific and technological developments that emerged in cosmeceuticals or dermocosmetics, the current cosmetic options are now used for much more than adornment or cleansing. The purpose of cosmetic care in rosacea is to restore the balance of the skin, while reducing the underlying inflammation, sensitivity, and dehydration. This review aims to highlight the various dermocosmetic care options that can reduce discomfort for and bring benefit to patients who have reactive and sensitive skin associated with rosacea. Additionally, this report discusses how pharmacists – public health agents – can and should offer counseling and support interventions to patients once oral or topical medications are dispensed to this pathology.

Keywords: Rosacea/dermocosmetic treatment. Quality of life. Cosmetics. Cosmeceuticals. Skin care. Pharmacist advice.

INTRODUCTION

The term “cosmetic” derived from the Greek word “Kosmetikos”, which originated from the word “Kosmeo”; this word means “to adorn, embellish”. Unquestionably, cosmetics are permanently embedded as a part of humanity and they are ultimately a reflection of our history. Concepts of beauty and appearance have always represented an integral part of being a human being. In fact, our earliest ancestors used their own bodies for ornamental and religious purposes, as reflected in tribal rituals and war paintings. In fact, the first records of cosmetic usage were found in Egypt (1400 B.C) (Kadunc *et al.*, 2013).

Essentially, cosmetics have long been appreciated as science and art. Cosmetics include the preparation and use of various products that are designed to embellish the skin and its appendages, when topically applied; they

do not include therapeutic methods that are adopted to address issues in the dermis, hypodermis, and other tissues (Rodrigo *et al.*, 2010).

Previously, it was believed, that the corneum stratum (CS) was an inert biological layer of skin that was impenetrable to topical products; however, several experimental studies have shown that topical agents can alter the skin’s barrier and cutaneous functions (Kadunc *et al.*, 2013). Dysfunction in the skin’s ability to act as a barrier constitutes an important factor in the pathogenesis of inflammatory skin diseases. Research has shown the beneficial effects of cosmetics on the physiological parameters of the skin’s barrier function. For example, the use of moisturizers has demonstrated significant improvements in the skin’s overall state, in its level of dryness, and in individuals’ quality of life (QOL) (Dreno *et al.*, 2014).

Nowadays, the development of cosmetics and body care products, known as CB, is regulated in a manner comparable to that of medicine; this fact is generally unknown to the public and dermatologists (Dreno *et al.*, 2014).

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In accordance with European legislation, cosmetics and body care products (CB) have been subject to frequent changes due to the establishment of higher requirements set forth by international policies to ensure product quality, safety, and efficacy. These policies are in place to guarantee consumer rights and to ensure the protection of public health. For instance, in Portugal, the National Authority of Medicines and Health Products, I.P. (INFARMED) is responsible for supervising and regulating the CB, ensuring that health professionals and consumers acquire high-quality (reliable) and safe CB (Santos, 2013; Portugal, 2008).

According to the Decree Law N^o 189/2008 of 24th September (Portugal, 2008), CB is legally defined as “any substance or preparation intended to be placed in contact with the various external parts of the human body (epidermis, hair system and hair, nails, lips and external genital organs) or with teeth and oral mucosa, with the purpose of exclusively or mainly clean them, perfume them, change their appearance, protect them, keep them in good condition or correct body odors”. From this definition, one can extract that CB are intended exclusively for external use (Rodrigo *et al.*, 2010).

There are several classes of cosmetics that have incorporated low concentrations of active substances that are capable of acting on the structure and functions of the skin, and which benefit both the skin and one’s general health (Rodrigo *et al.*, 2010). These products that do not fall within the definition of traditional cosmetics, but which cannot be considered drugs, are called cosmeceuticals (the term is an amalgamation of cosmetics and pharmaceuticals), dermocosmetics, or active cosmetics, as they are developed with the intent of causing a differential result in skin care. Thus, a cosmeceutical or dermocosmetic product offers therapeutic benefits to the skin, but it does not necessarily have a biologic dermocosmetic effect (Kadunc *et al.*, 2013). Rather, it intersects the areas of medicine and aesthetics (cosmetics), while having a great impact on QOL (Guerrero, 2011).

Cosmetics and skin care products have evolved from adornment products to treatments that are specifically designed to improve the look and feel of the skin; further, these products have faced scientific and technological advances that allow them to be developed based on the consumer’s age, ethnicity, lifestyle, and skin type (Dreno *et al.*, 2014). The appearance of one’s skin can translate into emotions. Dermocosmetics have thus established a new position in dermatology, as they offer support to control various phenotypes and skin diseases. These products have been developed due to scientific advances and the availability of new raw materials, which

have demonstrated their real utility and function and have renewed the current understanding of the normal physiology of the skin, as its appearance changes through physical changes and biological activity (Kadunc *et al.*, 2013; Dreno *et al.*, 2014).

As such, dermocosmetics alone or accompanied by a pharmacological treatment, are used to improve photo protection, dryness or aging skin, and the presence of inflammatory diseases such as acne, rosacea, atopic dermatitis, psoriasis, seborrheic dermatitis, other skin and hair disorders (Dreno *et al.*, 2014); these products meet the needs and requirements of the population and contribute to increase people’s QOL, sense of humor, and self-esteem (Dreno *et al.*, 2014).

Paying attention to previous considerations, the aim of this paper is to examine the current approach to skin care and to investigate more appropriate dermocosmetic products in rosacea, primarily those available for cases of mild rosacea or that serve as a complementary method to drug therapy in cases of severe rosacea. Recommended cosmetic products and products that are used to avoid this illness will be presented, and the importance of patient education will be highlighted using the most relevant information. Some alternative treatments will also be described.

Pharmaceutical interventions are extremely important in rosacea, as they can reduce the physical and emotional distress experienced by patients. The contribution of the pharmacist in (re) education habits and routines can and must be done through counseling.

SKIN BARRIER

The skin is the largest organ of the body; it impacts appearance and one’s relationship with others, it serves as a protective barrier, and it also acts as a barrier against external environmental threats. The skin is composed of the epidermis and dermis layers, which are supported by a third layer known as the hypodermis (Fernandes, 2012). The focus of this paper is to investigate various skin care products that are applied to the top layer of the skin, the epidermis, which is a protective barrier – and the layer that is most affected by rosacea.

The epidermis is a covering epithelium where the corneous is the surface layer. Unlike the surface layer, the epidermis has no blood vessels; however, diffusion occurs through the capillaries in the dermis, which mainly consists of keratinocytes (keratin producers) that provide permeability and structure, and when they migrate to the surface, they stratify, lose their nuclei, and become dead keratinocytes (keratinization), forming the cornea barrier.

Among these corneocytes, intercellular lipids arranged in bilayers are present (Fernandes, 2012; Anunciato, 2011).

In addition to the corneocytes (which are 70%–80% keratin), this barrier consists of 20% lipids and 15% water, and it is responsible for protecting against internal water loss, thereby regulating skin hydration. This barrier is covered by a hydro-lipid film (featuring sebum and sweat, respectively, segregated by the sebaceous and eccrine glands), which prevents dehydration (Fernandes, 2012).

The natural moisturizing factor (NMF) that is within the corneocytes consists of water-soluble and hygroscopic substances that absorb water, which is retained in CS (Catorze, 2010). Water retention in the NMF through the lipid bilayers and the hydrolipid film represents static skin hydration. The water coming in from the dermis passes through the CS to the skin's surface, where it evaporates, ultimately reflecting the balance between water content in the epidermis and the relative humidity of the environment. This process is referred to as transepidermal water loss (TEWL) and represents the dynamics of skin hydration; TEWL is an indication of skin barrier integrity (Anunciato, 2011; Catorze, 2010). A dysfunctional skin barrier, in combination with TEWL increments, causes cutaneous dehydration, which characterizes rosacea (Addor, 2016).

ROSACEA

Rosacea is a chronic inflammatory skin disease that affects the blood vessels and sebaceous glands, especially in the central zone of the face (nose, cheeks, forehead, and chin). It is more common in people with light skin, eyes, and hair; those of Irish, Scottish, or Northern European progeny; and/or those with a family history of rosacea (Portugal, 2015). Rosacea may present as lesions in those areas that are prone to sun damage, such as the ears, scalp, pre-sternal area, neck, or upper back (Bustinduy, Fumero, 2016). Persistent or recurrent erythema, papules, pustules, telangiectasias, and inflammatory nodules characterize this affliction; the reason why rosacea primarily affects the face is due to the abundance of sebaceous glands in this region (Steinhoff, Schaubert, Leyden, 2013), and there are also abnormalities in terms of vascular facial reactivity and the immune system (Fernandes, 2012). In addition to the diversity of clinical manifestations, the etiology and pathophysiology of rosacea remains unknown and there are no serological or histological markers (Wilkin, *et al.*, 2004).

Even though this is a disease that is not life threatening, it still has a negative impact on QOL; rosacea patients have a higher probability of experiencing depression, social phobia, embarrassment, and stress (Moustafa, Lewallen, Feldman, 2014).

This disease is classified into four subtypes and two variants. The subtypes have been distinguished by the presence of certain signs and symptoms, which have been designated as primary or secondary. A patient can display multiple subtypes simultaneously, but the evolution from one subtype to another is still controversial; however, the American society of rosacea, known as the National Rosacea Society (NRS), does not exclude its progression (Chauhan, Ellis, 2013; Elewski *et al.*, 2011). The various manifestations of rosacea may vary from one individual to another, but individuals must present at least one of the primary signals and eventually develop some secondary signals, so the diagnosis can be implemented (Chauhan, Ellis, 2013). The primary signs are flushing (transient erythema), non-transient erythema (persistent), papules, pustules, and telangiectasias. Secondary signs include burning or stinging, plaques, eye dryness, edema, ocular manifestations, and phymatous changes (Chauhan, Ellis, 2013).

In 2002, the NRS created a classification system for this condition in order to standardize the diagnosis among physicians; according to this system, rosacea is divided into its primary and secondary characteristics, as well as on the presence of one or more primary features. As far as secondary characteristics are concerned, these may or not be present, and in some cases, these characteristics may appear alone. The combination of two or more secondary signals is not sufficient for establishing a diagnosis; as such, the

different subtypes are shown based on different rosacea variants and their respective characteristics (Fernandes, 2012; Chauhan, Ellis, 2013; Two *et al.*, 2015; Barco, Alomar, 2008; Banasikowska, Singh, 2016).

Subtype I, known as erythemato-telangiectatic rosacea (ETR), exhibits a fine-textured skin, characterized by episodes of flushing that can last more than 10 minutes; this condition may also present with persistent central facial erythema, usually accompanied by stinging or burning, and exacerbated when topical agents are applied. Emotional stress, hot drinks, alcohol, spicy foods, exercise, hot or cold weather, and hot baths can cause flushing. Erythema can also be observed in the peripheral zone of the face, ears, neck, and upper chest. Telangiectasias are common, but not necessary, for the diagnosis of ETR. The skin around the eyes is usually unaffected. This is considered the most common subtype of rosacea. Subtype II, or papulo-pustular rosacea (PPR), is the classic presentation of rosacea and it usually occurs in middle-aged women. It is characterized by papules or pustules distributed in the central face, paranasal, perioral, and periorbital areas. In more severe cases, it may progress

to chronic facial edema; It is distinguished by the absence of comedones. Telangiectasias are less common than in subtype I, and flushing is less frequent and severe. Periocular edema may be the initial presentation of PPR. In more severe cases, it may progress to chronic facial edema; this form of rosacea is known as Morbihan's disease.

Subtype III, or phymatous rosacea (PhR), is the predominant form of this condition in men. It is characterized by thick skin and an increase in the irregular surface nodule holes, which may occur in any sebaceous facial area (e.g., the ear, eyelid, chin, or cheeks); the most affected is the nose area. ETR or PPR symptoms can also be found.

The NRS defines subtype IV, or ocular rosacea, by one of the following signs or symptoms: watery or red eyes, burning or stinging, eye dryness, itching, and photosensitivity; blurred vision, foreign-body sensation in the eye; telangiectasias in the conjunctiva and eyelid margins; or by eyelid and periocular erythema. Ocular manifestations usually precede any cutaneous manifestations, but they can also occur simultaneously. Other common symptoms are blepharitis, conjunctivitis, irregular eyelid margins, chalazion (eyelid cyst caused by inflammation of the meibomian glands), and hordeolum. Patients with cutaneous rosacea should be forwarded to an ophthalmologist when presenting with ocular or conjunctival hyperemia discomfort, ensuring a reduced risk of vision loss. This situation affects both sexes, unlike facial rosacea (Weinkle, Doktor, Emer, 2015). The different subtypes of rosacea are shown in Figures 1, 2, 3, and 4.



FIGURE 1 – Subtype I or erythemato–telangiectatic rosacea (ETR), showing central erythema. (Data from: Margalit *et al.*, 2016).

Granulomatous rosacea is a rare variant of rosacea characterized by papules or hard nodules of reddish color, which can turn into scars in severe cases. These lesions vary in size among patients, but they are monomorphic in



FIGURE 2 – Subtype II, or papulo–pustular rosacea (PPR), showing papules and pustules. (Data from: Margalit *et al.*, 2016).



FIGURE 3 – Subtype III, or phymatous rosacea (PhR), showing thick skin in the nose. (Data from: Margalit *et al.*, 2016).

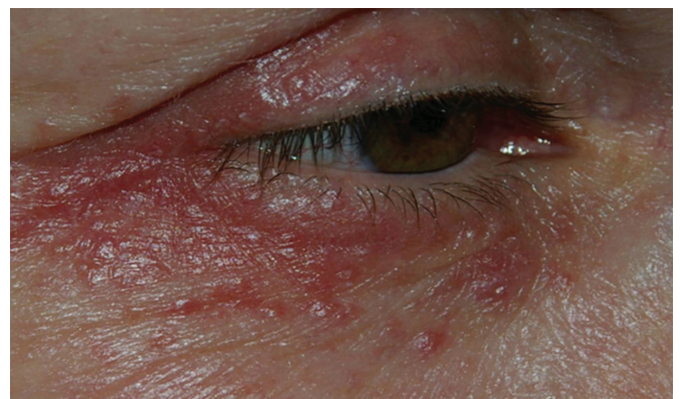


FIGURE 4 – Subtype IV, or ocular rosacea, showing eyelid margin erythema. (Data from: Margalit *et al.*, 2016).

each and situated in the upper part of the face around the eyes and nose (Wilkin *et al.*, 2004; Banasikowska, Singh, 2016) The other variant is fulminant rosacea, a very severe and rare form of rosacea, which arises suddenly in young women as papules, severe pustules, and nodules with cystic formation (Bustinduy, Fumero, 2016).

EPIDEMIOLOGY

The number of cases of rosacea is not yet fully understood, and several studies in recent years indicate that the prevalence of rosacea may vary from 1%–22%, depending on the methodology and sample used, making it difficult to make comparisons between them. Thus, questionnaires administered in the general population have the potential to access a larger sample, thus reflecting a greater prevalence of the disease, while questionnaires administered by dermatologists represent a more limited population, showing inferior results (Weinkle, Doktor, Emer, 2015). The results indicate that many patients never seek a doctor for their condition. It was estimated that 100 million people have rosacea and that females are the most affected, especially during menopause, at a ratio of 2:1 relative to males (Amsler, 2014). Very common in people who are fair skinned (skin types I–II) and have blond hair and blue eyes, rosacea affects more than 10% of the population in Northern Europe and 4% of darker-skinned people, such as African-Americans, Latin people/Hispanics, and Asians (Fabbrocini *et al.*, 2015). Those between the ages of 30–60 years are the most affected. Subtype I (ETR) is the most prevalent, followed by subtype II (PPR), subtype III (PhR) (which is most common in men over 40 years of age), and subtype IV (ocular) which, despite its difficult diagnosis (based on the diverse presentation of this condition), is the most frequently reported by ophthalmologists, with an incidence rate of 6%–72%. Rosacea is considered as a dermatological entity, and it may be a more common disease than previously suspected (Weinkle, Doktor, Emer, 2015).

PATHOPHYSIOLOGY

The etiology of rosacea seems to be multifactorial; in addition to one's genetic predisposition and skin

phototype (more common in individuals with a family history of rosacea and low phototype skin), which are critical for prolonged and exacerbated vascular reactions, both environmental and intrinsic factors can trigger vasodilatation. These factors, alone or in combination, determine the evolution of the dermatosis, acting as triggers or aggravating factors of rosacea (See Table I) (Adams, Coven, Grippe, 2016; Addor, 2016). As such, rosacea is triggered due to chronic exposure to repeated factors, particularly those that cause flushing, which include hot and cold temperatures, sunlight, wind, hot drinks, exercise, spicy foods, alcohol, topical irritants, and menopause (Pelle, 2012). The skin's hypersensitivity to thermal, chemical, and biological stimuli supports the multifactorial theory underlying the etiology of rosacea (Adams, Coven, Grippe, 2016; Addor, 2016). In fact, the cause of the disease is unknown; however, microorganisms, ultraviolet radiation (UV), and abnormalities of the immune system are possible causes of the disease (Fernandes, 2012).

The pathophysiological changes contribute to the epidermal, dermal, and perivascular inflammation that result in skin barrier dysfunction, where the skin is unable to attract and retain water. There is an increase in TEWL, which translates into dryness and skin sensitivity. This increase in TEWL involves the central region of the face, and it plays an important role in rosacea subtypes I and II. Additionally, the pH of the skin increases and there is a loss of antimicrobial function. Clinically, there is a low tolerance to topical products such as soaps and substances with low pH (lactic acid, retinoic acid, etc.) that results in burning, itching, and stinging (Bustínduy, Fumero, 2016; Two *et al.*, 2015; Addor, 2016).

DIAGNOSIS

Usually, establishing a rosacea diagnosis is not

TABLE I – Triggers or intensifiers of rosacea (Data from: Bustínduy, Fumero, 2016)

Triggers or intensifiers	Types
Dietary factors	Liver, yogurt, cream, cheese, eggplant, tomato, spinach, lime, white beans, peas, avocado, banana, plum, raisins, fig, chocolate, vanilla, citrus, soy sauce, vinegar, spicy and hot foods, alcohol, hot beverages, and yeast derivatives.
Emotional	Stress, anxiety.
Weather	Sun, intense wind, cold, humidity.
Temperature	Heated atmosphere, saunas, hot baths.
Cosmetic products and medication	Cosmetics and <i>sprays</i> with alcohol. Fragrances. Hydro-alcoholic substances or substances with acetone. Vasodilators and topical corticoids.
Health conditions	Menopause, caffeine withdrawal, chronic cough.
Exercise	Intense exercise or weight lifting.
Common stingers	Acetone, alcohol, propylene glycol, sodium lauryl sulfate.

difficult (Rodrigo *et al.*, 2010). The term “rosacea” does not define a specific clinical condition (Del Rosso *et al.*, 2014). The recognition of primary and secondary signals is the key to accurate diagnosis and the establishment of a treatment plan; one or more primary signals must be present for diagnosis in the central area of the face (Adams, Coven, Grippe, 2016).

Diagnosis is clinical and involves a variety of potential manifestations that vary both in terms of presentation and magnitude among different patients. There are no tests or clinical markers to confirm this diagnosis; therefore, observations, clinical history (flushing triggers, frequency and duration of those triggers, morphology, and temporal course of the lesions), and the exclusion of other disorders are of paramount importance. Following diagnosis, the management of rosacea should be taken to remove or reduce any signs and symptoms while using multiple therapies to optimize therapeutic outcomes (Barco, Alomar, 2008; Del Rosso *et al.*, 2014).

DIFFERENTIAL DIAGNOSES

Erythema, facial redness, and sensitive or scaly skin are characteristics of the ETR subtype; this presentation is shared by seborrheic dermatitis, lupus erythematosus, other types of photodermatitis, the prolonged use of topical glucocorticoids, Asian flushing syndrome (a genetic mutation in the enzyme involved in the metabolism of ethanol), or niacin intake (vitamin B3) (Chauhan, Ellis, 2013; Del Rosso *et al.*, 2013; Wolff, Johnson, Saavedra, 2015). PPR may be confused with acne, perioral dermatitis, *Staphylococcus aureus* folliculitis, and *Demodex folliculorum* infestation due to the presence of facial papules and pustules (Wolff, Johnson, Saavedra, 2015).

THE TRIAD OF ROSACEA CARE

The complex and multifactorial pathophysiology of rosacea implies that there is a need for an appropriate care plan. Thus, a threefold approach is most likely to achieve therapeutic success. The triad of rosacea care – patient education, skin care, and treatment – involves taking into account all of the patient’s needs, instead of only focusing on specific symptoms of the disease. For example, techniques such as relaxation training, cognitive–behavioral therapy, biofeedback techniques, and the use of drugs such as antidepressants and beta blockers may be important when controlling the emotional factors faced by patients with ETR (Elewski *et al.*, 2011).

Patient education

Patient education is essential so that the individual can understand the situation and set realistic expectations for therapy in terms of magnitude of improvement and response (Del Rosso, Baum, 2008). Counseling the patient regarding trigger factors and skin care techniques (like moisturizing, cleansing, and using sun protection) are important steps in the non-pharmacologic treatment of rosacea (Two *et al.*, 2015).

Dermocosmetic care

Appropriate skin care (dermocosmetic care) can help repair and maintain the integrity of the skin barrier, reduce the signs and symptoms of the condition, and increase the beneficial effects of medication. They play a central role in maintaining remission and symptom relief (Del Rosso, Baum, 2008). Dermocosmetic care should take into account three goals: ensure adequate hydration and skin protection, improve disease manifestations in conjunction with medication, and camouflage areas of redness as much as possible (Guerrero, 2011).

Rosacea was once called “acne rosacea”, and it was frequently confused with acne. Although the two conditions resemble one another, such as in terms of the distribution of lesions, papules, and pustules, and its responsiveness to tetracycline, rosacea is different insofar as it does not feature acne comedones or increments of sebaceous secretion. This difference is very important because the products used for oily (acne-prone) skin are generally not suitable for rosacea. As such, one should avoid using astringent formulations and sebum regulators (Guerrero, 2011; Oliveros, 2012).

There are many cosmetic formulations that dry and irritate skin that is prone to rosacea; this is possibly due to skin barrier dysfunction or vascular hyper-reactivity (Pelle, Crawford, James, 2004). The skin’s sensitivity can increase not only because of exposure to many hygienic products, but also based on how these products are applied to the skin. The symptoms of sensitive skin tend to be more common and more severe in patients with ETR, although patients with untreated PPR report symptoms such as stinging and burning (Del Rosso *et al.*, 2013). Improper skin care can cause or worsen the visible signs and symptoms of PPR and ETR. Issuing a warning to avoid these skin care products is appropriate for these patients. Astringents, toners, menthol, and camphor are examples of such products (Pelle, Crawford, James, 2004); therefore, an adequate selection of skin care contributes to improvements for both subtypes (Levin, Miller, 2011).

The skin's barrier function in rosacea patients is interrupted; these individuals have sensitive skin and flushing occurs easily. Burning, stinging, and itching are common and motivated by this dysfunctional barrier. The CS is composed of corneocytes, which are kept together by desmosomes and an intercellular lipid membrane, including physiological lipid-regulating TEWL. Proper skin care can help repair and maintain the lipid membrane of the epidermal barrier (Del Rosso, Baum, 2008), which includes a gentle facial cleanser and moisturizer, or a cutaneous barrier repair product, respectively; these products have demonstrated their ability to improve therapeutic outcomes while reducing skin irritation in patients undergoing medical therapy. There are no large-scale comparative studies of patients with rosacea that specifically recommend which dermocosmetic products must be used. However, facial cleansing and moisturizing should be selected based on their ability to repair and maintain the permeability of the CS, to increase hydration, and to reduce the likelihood of skin irritation. Moreover, these products are cosmetically pleasing and they do not contain additives that tend to induce allergic or irritant contact dermatitis (Del Rosso *et al.*, 2013). However, there is a lack of scientific evidence on the use of skin cosmetics, and the associated results are relative when promoting rosacea treatment or reducing flushing symptoms (Del Rosso *et al.*, 2013).

The final purpose of treatment is to restore the skin's balance by limiting the dilation of blood vessels and inflammation, reducing skin sensitivity, and offsetting dryness. Below, the most important type of care that should be adopted by patients with rosacea is discussed.

Cleanser – the importance of a smooth agent

A cleanser that can be used in combination with topical therapy (if any), while simultaneously remaining biocompatible with the skin's conditions, must be recommended (Mukhopadhyay, 2011). Ideally, a cleanser removes dirt, grease, environmental pollutants, and harmful skin bacteria without changing or removing the lipids, proteins, and normal flora that contribute to its integrity (Levin, Miller, 2011). A cleanser works as a surfactant with affinity for the water phase (polar) and oil phase (non-polar), reducing the tension within the skin, as well as between dirt (non-polar) and water, while removing dirt with cleaning actions (Draelos, 2014).

Despite being effective at cleansing the skin, an aggressive or abrasive cleanser damages the CS when it removes lipids, proteins, and NMF. In PPR and ETR, use of these agents compromises the permeability of the CS

and sensitive skin; it is advisable that soft cleansers be used, as they will not exacerbate this condition (Levin, Miller, 2011).

Some compounds make for aggressive cleansers, such as surfactants that are combined with keratin to promote its denaturation, resulting in damage to keratinocyte cell membranes and leading to dermal adverse responses. The surfactants are divided into four groups (anionic, cationic, amphoteric, and non-ionic), according to their molecular charge, or lack thereof. Anionic agents are those with the greatest potential to irritate the skin, although they can be combined with a cationic or nonionic surfactant, which affect the potential of these agents to lead to irritation. These agents are commonly used, even in the mild cleansers, due to their excellent foaming ability. Cationics have excellent antimicrobial properties. The type and amount of surfactant influence the potential for irritation and dryness. Therefore, the irritation potential of a given cleanser may increase, if left longer on the skin (waste cleanser or rinse factor). The maintenance of the skin surface pH (4–6.5) during cleaning prevents the growth of certain microorganisms (pH cleanser) (e.g., syndets and cleansing lotions have a neutral or slightly acidic pH, which corresponds to the skin pH) (Levin, Miller, 2011; Mukhopadhyay, 2011).

The importance of soft cleansers with simple formulations in the control of rosacea and other sensitive skin conditions has spurred the development of therapeutic soft cleansers; these agents offer delicate cleaning without removing the functional components of the skin (Levin, Miller, 2011). There are several types of cleaning products, such as **soaps**, which are mixtures of fatty acid esters with good emulsifying properties that produce enough foam, but are not suitable for rosacea because they are alkaline (pH 9–10) and can either destroy the superficial lipid layer of the skin or they can worsen the skin's barrier function, leading to excessive dryness (an effect called "soap") (Del Rosso, Baum, 2008; Pinheiro, Pinheiro, 2007). Soaps are excellent at removing dirt and grease, but they are aggressive cleansers; when they remove the beneficial lipids and proteins, they hinder the CS's ability to increase TEWL, resulting in dehydration, scaling, and penetration of topical products, and leading to greater sensitivity and more irritated skin (Levin, Miller, 2011). **Syndets**, also called synthetic detergents, dermatologic pains, or "no-soap soaps", are less irritating, as they reduce dryness in the skin and have a pH that is neutral or slightly acidic (between 5.5–7); these agents are more compatible with the natural acidity of the skin. They are available in solid or liquid form. The solids are syndet bar cleansers, where the liquid phase is reconstituted by the addition of water and

they have an excellent tolerance (Del Rosso, Baum, 2008; Pinheiro, Pinheiro, 2007). **Combars** feature a combination of soap, syndet bars, and an antibacterial agent with an alkaline pH (9-10). Although their antibacterial power reduces harmful bacteria, these agents can eradicate the normal flora of the skin and increase dryness and irritation. Patients with rosacea already have an imbalance of flora, as well as sensitivity and dryness issues, thus rendering the combars unsuitable for this condition (Levin, Miller, 2011). Combars are softer than soaps, but they provide more thorough cleaning than syndets (Mukhopadhyay, 2011). **Cleansing lotions** (cleansing creams or milks) are rather smooth cleansers that free lipids, do not form soap, and leave a thin film of moisturizer on the skin (Levin, Miller, 2011); they do not require water for its elimination and they contain emollients and/or humectants that counter the potential dryness or irritation of the surfactant. These agents have a slightly acidic or neutral pH that is compatible with the skin's pH. Cleansing foams are also appropriate for rosacea (Del Rosso, Baum, 2008). **Cleansing waters** are used to remove cleansing lotions. They contain detergents, humectants, and thermal water that is typically applied with cotton; cleansing water is suitable for reactive skin types (Levin, Miller, 2011).

In summary, syndets or cleansing lotions are the most suitable skincare agents in the treatment of rosacea, as they have less potential for irritation. Both cleansing agents can deposit beneficial ingredients to the skin despite the short contact that they make during cleaning and rinsing (Levin, Miller, 2011). Therapeutic cleansers contain 10% sodium sulfacetamide and 5% sulfur, which are approved for the treatment of rosacea. The single contraindication is hypersensitivity to sulfonamides, sulfur, or other components (Mukhopadhyay, 2011). These cleansers can be identified by the fact that they have the terms "balanced pH" or "suitable for sensitive skin" written on the label (Draelos, 2014).

The application of these cleansers should be done in a smooth manner, without rubbing or friction, to prevent redness and burning. It is difficult to impose a skin cleansing routine on some individuals, as some cleanse their skin in the shower, and others just refuse to clean their faces with water (Deshayes, 2014). The pharmacist needs to adapt to different situations and should advise on the least aggressive gestures. The application of a syndet should be done with the fingers using circular and smooth movements in the face, and this agent should be rinsed with warm water. For makeup removers that do not require rinsing (lotions), the gestures are the same, and the product should be eliminated using a makeup-removing cotton ball. In both cases, cleaning is followed by the application

of thermal water (which has a soothing effect) or micellar water, but this is less effective for cleansing areas of embossed injury (e.g., papules and pustules) (Deshayes, 2014). Thermal water sprays should be regularly used among these patients; tap water, if applied on the face, should be tepid and any changes in temperature should be avoided (Guerrero, 2011). Technological advances have enabled the creation of new soft cleansers that provide moisturizing benefits; these properties allow these cleansers to be used in various dermatologic disorders, in parallel with topical therapy, thereby influencing disease outcomes and progression (Mukhopadhyay, 2011). Examples of various cleanser compositions are noted in Table II.

TABLE II – Example of a cleanser composition (Data from: Mukhopadhyay, 2011)

Water	Fillers (hardeners)
Surfactants	Preservatives (inhibit microorganisms)
Moisturizers (for hydration)	Fragrance (mask surfactant odor)
Binders (stabilizers)	Pigments (in some)
Lather enhancers (in some)	

Cutaneous moisturizer or emollient

After cleaning the skin, hydration is important for restoring the skin's barrier. Moisturizers do not treat the barrier function; rather, they create an environment that is conducive to skin recovery (Draelos, 2014). Moisturizing is a word of Greek origin, which means "add water" or "combine with the water" (Catorze, 2010). Emollient is a word that is derived from the Latin term *emolliens*, whose verb is *emollire* and means "soften" or "smooth". Moisturizers are topical substances that make the skin smooth and soft. Regardless of how they operate, the emollient effect is common to all substances that contribute to the skin's hydration (i.e., moisturizers and emollients) (Catorze, 2010; Pinheiro, Pinheiro, 2007).

Daily use of a hydrant is important for reducing a dysfunctional epidermis, which acts by increasing the water content of the skin at the CS level (Catorze, 2010; Del Rosso, Baum, 2008). Moisturizers contain lipids that soften and restore elasticity and homeostasis in the skin, avoiding the TEWL, to leave a lipid film that fills the spaces between the corneocytes and facilitates its accession to the CS level (Pinheiro, Pinheiro, 2007).

Cutaneous moisturizers work on the skin's protective

barrier in many ways (Catorze, 2010; Del Rosso, Baum 2008; Levin, Miller, 2011). First, it is occlusive, preventing the evaporation of water (e.g., silicates, petrolatum, mineral oil, lanolin, and silicone derivatives). It is also humectant; it captures and sets internal and/or external water levels by increasing the skin's hydration and facilitating increased penetration of topical pharmacologic agents; examples include glycerin, propylene glycol, sodium lactate, hyaluronic acid, urea, lactic, glycolic and tartaric acids, and sorbitol, among others; glycerin is the most widely used and one of the most effective humectants, but high concentrations can result in clammy skin after application. Mixed products compensate for lipid deficiency, repair the skin's barrier function, and aid in water regulation (Levin, Miller, 2011; Mukhopadhyay, 2011).

Moisturizers exist in two formulations: oil in water emulsions (O/W), where water is the dominant phase; these agents are more fluid and less oily and are normally used in day creams. These moisturizers are characterized by a fresh feeling and non-glossy appearance. The day moisturizers are generally composed of mineral oil, dimethicone, propylene glycol, and sufficient water to form a cream or lotion. Water in oil emulsions (W/O) in which the oil is the dominant phase are greasy and more occlusive emollients. Normally used as night creams, they are identified by a warm feeling and shiny appearance; night moisturizers are comprised of mineral oil, acetylated lanolin, petrolatum, and water to form a cream (Draelos, 2014; Pinheiro, Pinheiro, 2007).

Moisturizers should have the maximum possible purity to limit the risk of irritation, and they should be devoid of fragrance and alcohol. Actives are multiple and often combined. They are divided into three classes: smoothing, vessel protective, and anti-inflammatory. The components that reinforce the skin barrier and favor the water reserve in the epidermis are caused by classical components such as glycerin, Karité butter, and others. A low degree of irritants (Deshayes, 2014) (lactic, glycolic, and salicylic acids, or retinol), which may be part of anti-aging moisturizers, are discouraged in rosacea (i.e., it is preferable to opt for basic moisturizer formulations) (Draelos, 2014).

Overall, formulations that contain astringents and abrasives, and which can exacerbate the symptoms of rosacea, must not be used. A list of light and moderate irritants that can foster potential skin irritation to a patient with rosacea is presented in Table III. It is the absence or presence of low concentrations of these potential irritants that contributes to the smoothness of the formulation (Levin, Miller, 2011).

Cutaneous moisturizers are the most frequently prescribed products in dermatology and they are considered to feature equal therapeutic and cosmetic action; hence, these agents fall under the group of cosmeceuticals (Catorze, 2010).

TABLE III – Substances that induce mild and moderate cutaneous stinging (Data from: Draelos, 2014)

SLIGHT STINGERS
Benzene
Phenol
Salicylic acid
Resorcinol
Phosphoric acid
MODERATE STINGERS
Sodium carbonate
Trisodium phosphate
Propylene glycol
Propylene carbonate
Propylene glycol diacetate
Dimethylacetamide
Dimethylformamide
Dimethylsulfoxide
Diethyltoluamine
Dimethyl phthalate
2-Ethyl-1,3-hexanediol
Benzoyl peroxide

Sunscreen

Sun protection covers two objectives: it ensures the required photo-level protection in all individuals and decreases the exacerbation of signs and symptoms induced by sun exposure in patients with rosacea (Guerrero, 2011). Considering that ultraviolet (UV) radiation can trigger rosacea, it is recommended that patients use a daily product containing a sun protection factor (SPF) level higher than 50+ to prevent the destruction of the dermis induced by UV radiation. It is recommended that patients use formulations that are able to filter out UV-A and UV-B radiation (Del Rosso, Baum, 2008; Portugal, 2015). Physical or mineral filters with titanium dioxide and zinc oxide are well tolerated, but hardly accepted, because after application, they leave a white layer on the skin (Elewski *et al.*, 2011; Deshayes, 2014). Despite this situation, these filters should be preferred due to their simple formulation, which provides them with a high level of tolerability (Guerrero, 2011). The sunscreen must be able to be spread, smoothly, over the face without oiliness, and while maintaining the potency

and duration of photoprotection (Guerrero, 2011). In this regard, components such as silicones should be included to minimize stinging and erythema. In cyclomethicone or dimethicone forms, silicones are non-irritating; act as non-acnegenic occlusive agents, which delay TEWL; confer water resistance to cosmetics; and are easily spread on the skin (Pelle, Crawford, James, 2004).

However, no sunscreen is able to avoid the unpleasant sensation of infrared radiation, which accentuates feelings of redness and burning. It is ideal for patients to use wide-brimmed hats and sunglasses (Deshayes, 2014); sunscreen can serve as a makeup primer.

Corrective makeup

Some patients want to use cosmetics that mask erythema, telangiectasia, papules, and pustules, which are less visually attractive (Del Rosso, Baum, 2008; Draelos, 2001). In the case of a man or a woman, a medical appointment should not end without a makeup prescription, which must be offered as a complement to treatment, since the concept of QOL in this condition is essential for ensuring that the injuries disappear and bring clinically visible results, in accordance with some authors' findings. Therefore, this dermatologic or corrective makeup (CM) is defined as a therapeutic bridge to achieve positive and visible results (Deshayes, 2014). The CM uses the principle of color opposition (Figure 5), in which pigments are designed to match the normal color of the patient's skin, while covering the underlying lesions or redness. Thus, erythema is offset with green pigments, which neutralizes the red color and is easily camouflaged. The mixture of red skin with a green broker foundation produces a brown tone that is covered by a conventional foundation (Draelos, 2001). Examples of CM applied on ETR and PPR patients are shown in Figures 6 and 7.

The makeup used in rosacea care must meet certain characteristics (Deshayes, 2014). For instance, very red lesions require the use of specific products with a large amount of pigments; application and removal must be made with extreme softness, particularly when there is active inflammation. The product must also be rich in pigments to achieve maximum coverage (these products contain 5–8 times more pigment than a single foundation), but they should also be easy to spread. As is the case with sunscreen, this strong pigment load offers the ability of partially protecting the skin from sunlight. Additionally, a compatible moisturizer should precede the application of this makeup; otherwise, it forms a type of fuzz on the skin. There are no moisturizing properties in the CM; rather, it only offers camouflage and a powdered appearance (Deshayes, 2014).

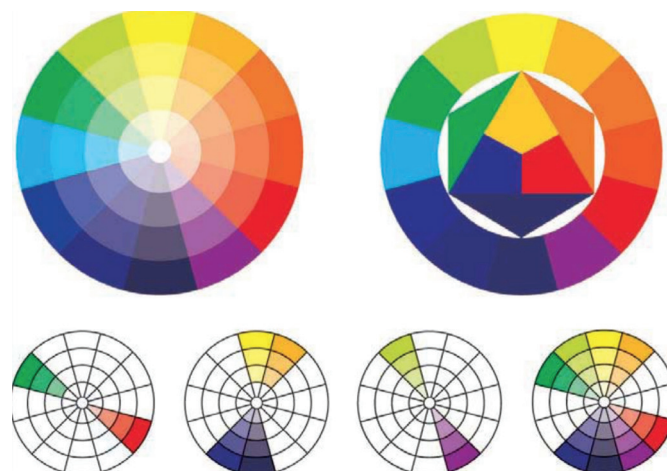


FIGURE 5 – The principle of color opposition used in corrective makeup, which shows that green neutralizes red. (Data from: Guerrero, 2011).

CM is presented in different formats: fluid formulations, creams, compact creams, sticks, and powders. These products cannot be irritating or allergenic; they should not contain perfume, should not be comedogenic or acnegenic, and they must be clinically tested. In inflamed skin, these products should avoid any friction that accentuates the erythema and renders makeup application an unpleasant process. These cosmetic products should be applied to the injury by gently tapping the skin with one's fingers (Deshayes, 2014; Draelos, 2001).

Cleaning the skin to sanitize it (without leaving any specks that may affect the process of neutralization), hydrating the skin according to skin type, neutralizing the lesions with a green color corrector, choosing the most suitable foundation tone for the skin's photo type while applying it with a soft touch (with the third finger or a sponge), and applying a powder to set the makeup are included in CM process (Parada, Teixeira, 2008).

The aforementioned products, with their many constituents, rarely contain no irritating solvents; they are more difficult to apply and remove, so their use must be avoided. Thus, formulations with a simple composition, and which can be adjusted with a powder containing protection against UV-A and UV-B, are recommended (Pelle, Crawford, James, 2004).

Treatment

There is no cure for rosacea, but the use of different methodologies helps to reduce symptoms and the spacing of crises, and it helps to improve its aesthetic aspect (Fernandes, 2012). Fortunately, there are many available



FIGURE 6 – Before and after applying corrective makeup in an erythemato–telangiectasic rosacea patient. (Data from: Deshayes, 2014).



FIGURE 7 – Before and after applying corrective makeup in a papulo-pustular rosacea patient. (Data from: Deshayes, 2014).

treatments that can provide relief to the patient when used correctly, and in accordance with the clinical presentation. Any treatments used for this chronic inflammatory condition must meet the following objectives (Elewskiet *al.*, 2011; Weinkle, Doktor, Emer, 2015): relieving signs and symptoms through fast-acting treatments; delaying or preventing the development of more advanced stages of the disease; maintaining the state of remission and preventing exacerbations by prolonged therapy to prevent relapses; keeping the skin in the best possible condition; and improving the patient's QOL. The strategies employed in clinical treatment, though not curative, can effectively reduce inflammatory lesions and facial erythema, particularly perilesional erythema (Del Rosso, Baum, 2008). The situations of mild to moderate rosacea (ETR or PPR) can be treated by over-the-counter (OTC) products and, in most cases, it is not necessary to resort to drug prescriptions (oral or topical therapy) (Portugal, 2015). In cases where therapy is necessary, topical agents are used for acute flares (erythema and inflammatory lesions), but they are primarily used to maintain remission states. Selecting between the different dosage forms depends on the skin type and the area to be treated; for example,

creams are preferable in damp areas, while lotions are more suitable to the scalp. Compared with oral treatments, topical agents have fewer side effects and a lower tolerance level. However, the effects are slower at the beginning, resulting in a longer period before any desired results are achieved (Adams, Coven, Grippe, 2016).

Regarding topical therapies, the only US Food and Drug Administration (FDA)-approved agent for persistent erythema is brimonidine tartrate gel. Furthermore, treatments for PPR include metronidazole and azelaic acid (available in a variety of strengths and formulations). Some authors consider these agents beneficial for PPR, while the combination between pimecrolimus, oral treatments, and/or vascular therapy is suitable for ETR, despite the fact that these agents are non-FDA-approved therapies. To reduce papulo-pustular lesions, some of the non-FDA-approved treatments include benzoyl peroxide and antibiotic combinations (e.g. BP-clindamycin). In addition to the potential irritation associated with these agents, there are limited published data on sodium sulfacetamide 10% + sulfur 5% cleanser (which is also malodorous); this formulation has shown efficacy for the treatment of inflammatory lesions

and facial erythema in a previous investigation (Weinkle, Doktor, Emer, 2015).

In cases of moderate to severe rosacea (PPR and ocular rosacea), and in addition to skincare and skin cosmetics (non-pharmacological treatments), oral therapy is typically used. Oral therapies are administered to reduce inflammation, papules, and pustules (Adams, Coven, Grippe, 2016; Portugal, 2015). Regarding oral therapies, the only FDA-approved option for PPR is the modified-release doxycycline (40 mg daily), which provides anti-inflammatory effects with sub antimicrobial dosing. Oral doxycycline, as well as minocycline with azelaic acid or metronidazole, improves inflammatory lesion counts. Macrolides, metronidazole, and oral isotretinoin are non-FDA-approved systemic therapies for PPR. Oral isotretinoin is reserved for severe cases of all rosacea subtypes (Weinkle, Doktor, Emer, 2015).

Laser therapy is effective for reducing erythema and telangiectasias, as their targets are the blood vessels. In rosacea, the following can be used: IPL (intense pulsed light laser) or PDL (pulsed dye laser). IPL allows for the removal of abnormal vessels, reducing inflammation and restructuring the collagen in the skin (Adams, Coven, Grippe, 2016). Surgical treatments are used for PhR due to thickening of the skin, in order to standardize the nose edges while offering minimal scarring, if possible (Fernandes, 2012). Vascular lasers, together with oral isotretinoin treatments, are beneficial for patients with multiple subtypes of rosacea (Weinkle, Doktor, Emer, 2015).

Alternative treatments

There are plant-based substances that can be used to reinforce the walls of the blood vessels, modulate vessel motricity, and reduce perivascular edema. Additionally, the anti-softener and anti-irritant effects improve tolerability and compliance to topical pharmacotherapy. Dermocosmetic products have earned a prominent place in the control of dermatological procedures, especially following vascular laser therapy; these products help to improve the visibility of superficial blood vessels, which are targets of this therapy, and they induce healing days after the procedure (Guerrero, 2011).

Creams that feature liquor ice, grapeseeds, golden chamomile, and horse chestnut have vasoconstrictor properties that reduce erythema and telangiectasia (Lemmel, 2009). Green tea reduces the papules and pustules; conversely, niacinamide (in vitamin B3 form) improves the function of the skin barrier and reduces redness. *Aloe vera* and chamomile reduce irritation and

inflammation, respectively. These natural therapies require further clinical trials, as they may induce adverse effects, especially when combined with prescribed medication (Adams, Coven, Grippe, 2016).

Research has been identifying several active ingredients that can provide relief and increase comfort to patients with telangiectasias; as such, floral waters (e.g., witch hazel, orange blossom, or cherry laurel) are recommended to soothe the reactive skin of rosacea patients. Nowadays, interest is primarily focused on flavonoids, which have vasculotropic and antioxidant effects. The long list of flavonoids include hesperidin methyl chalcone; *Vitis vinifera*; *Centella asiatica* and *Melilotus officinalis* stimulate microcirculation; *Ruscus aculeatus* with anti-edema action and a microcirculation protector; *Vaccinium myrtillus*, which reduces capillary fragility; *Ginkgo biloba*; and licorice extract, which acts as an anti-irritant (Guerrero, 2011; Lemmel, 2009), among others.

SOCIAL AND PSYCHOLOGICAL IMPACTS OF ROSACEA

ETR is one of the subtypes of rosacea that is frequently misunderstood and sometimes associated with alcohol, particularly when considering the onset of blushing, which creates a very negative effect on social relationships (Guerrero, 2011). Patients with rosacea may experience low self-esteem, feelings of frustration, embarrassment, worry, and more limited social relations due to their condition, thus compromising their QOL. Strategies for managing rosacea must be focused on the psychological impact of this condition while improving physical manifestations (Elewski *et al.*, 2011). Patients who are knowledgeable about their condition deal better with possible complications or relapses. Studies indicate that emotional health is typically restored when the symptoms are successfully treated (Nordqvist, 2016). In turn, this success is more likely if the patient adheres to the treatment prescribed by the doctor, and if appropriate measures are taken (such as using the correct dermocosmetic products, and applying them with the proper gestures) to minimize the factors that aggravate this condition. It is essential that health professionals assess their patients' QOL using a fast and simple tool like the Dermatology Life Quality Index (DLQI). The DLQI consists of 10 questions, where the answers consist of "not at all", "a little", "a lot", and "very much", to assess how the individual's skin condition in the last week had an impact on his or her day-to-day life (Adams, Coven, Grippe, 2016).

PHARMACEUTICAL INTERVENTION

The main objective of pharmaceutical interventions in rosacea is to reduce the physical and mental discomfort for the patient (Portugal, 2015). The pharmacist can observe the ETR as the first stage of rosacea and provide the patient with advice about general hygiene and skincare; the doctor must warn against the use of exfoliating products, as the skin is thin. Moreover, photosensitizing products are also contraindicated, as they contain perfumes and acidic substances. For cleansing purposes, products without alcohol, detergents, and parabens should always be recommended (Oliveros, 2012).

In situations of moderate to severe rosacea, and in addition to skincare and skin cosmetics (non-pharmacological treatments), the patient should be advised to consult a doctor to evaluate the situation, who can then prescribe the most appropriate treatment. Any oral medications must be discontinued if the patient has any symptoms such as headaches, dizziness, arthralgia, myalgia, gum discoloration, or gray skin color that can be confused with persistent bruising or symptoms of hypersensitivity, such as hives. The use of artificial tears and adequate daily cleansing eyelashes in the treatment of ocular rosacea are recommended, particularly in conjunction with oral antibiotics (Portugal, 2015). To help reducing the thickness of meibomian gland secretions and promote their expression, hot compresses could be applied to the eyelid margins. Applying light pressure to the eyelids can help gland expression. Nonpreserved artificial tears are the most suitable due to the frequency of application and should be applied abundantly all the time. (Kharod-Dholakia, 2017).

In order to improve patients' QOL and well-being, there are gestures and dermocosmetic products that the pharmacist should recommend, so as to reduce discomfort and improve one's aesthetic appearance (Portugal, 2015; Nordqvist, 2016; Portugal, 2010). Moreover, they should create a list of foods and beverages that may cause or intensify the condition, and which can aggravate rosacea flare-ups. Some recommendations could be given to the patient, such as cleaning the skin twice a day with suitable products, and drying the skin gently with a soft cotton cloth without rubbing. The patient should avoid harsh abrasives, select soft products that are tailored to the patient (and that do not exert astringent action), and avoid alcohol, soap, parabens, fragrance, and oil components. The patient should remain well hydrated, as dehydration can increase and trigger inflammatory processes in the cells, thereby altering the structure of the various layers of the skin. Use creams whose high tolerance

reinforces the skin barrier; spray the face with thermal water, which is rich in elements and have a soothing action; use anti-inflammatory, antioxidant, healing, and moisturizing products that feature vasoprotective action, anti-reddening, decongestant, and soothing properties (e.g., vitamin C, escin, *Ruscus* extract, *ginseng*, *ginkgo biloba*, dextran sulfate, and rhamnosides), which operate at the microcirculatory level to strengthen the wall of blood vessels (Portugal, 2015; Oliveros, 2012). Additional advice must be transmitted, including the use of daily sunscreen throughout the year (particularly those with UVA/UVB solar filters and an SPF of 50+). In cases of intense sun exposure, sunscreen application must be performed about 30 minutes before sun exposure and repeated every 2 hours. After the application of topical medication, the patient must wait at least 10 minutes before applying any products. The products should be applied in the following order: moisturizer, sunscreen, and makeup, if the individual wishes to apply it. CM should be used before applying the remaining makeup; makeup should always be removed before bedtime, and creams or appropriate treatments should also be applied. In the winter, patients are urged to wear a scarf to protect their faces. Any action that reduces one's stress levels will help prevent crises and exacerbations of existing symptoms. These actions may include low-intensity exercises, like walking or swimming; healthy eating; and sleeping at least 7 hours (Portugal, 2015; Nordqvist, 2016; Portugal, 2010). Patients should also introduce foods into their diets that are anti-inflammatory in nature, such as vitamin B, ginger, turmeric, omega 3, and olive oil (Adams, Coven, Grippe, 2016). For men who shave, it is preferable that they use an electric shaver instead of the blade. The patient cannot apply the product in the periocular area, or near mucous membranes or other sensitive areas, unless medically indicated. If used, the product must be applied in a thin layer, as the amount of product is not synonymous with faster, more visible results. Of note, patients should wash their hands after applying the product (creams, gels, or emulsions), and they should only apply the product to affected areas, given that application to other areas can cause skin irritation. In the event of accidental contact with the eyes, the patient should rinse his/her eyes thoroughly with water and, if necessary, go to a doctor (Portugal, 2015).

With respect to the support to avert prescription drugs, the pharmacist must recommend to the patient about the need of going to the pharmacy at least monthly, because the therapy can be followed up and improvements evaluated in accordance with the purpose of doctor, in terms of dosage and location (Portugal, 2015). Most

patients respond well to treatment, but improvements are gradual and must be carried out for three months or more to visualize the results. Patients should be alerted to this situation, and they should also hold realistic expectations of their treatment to increase adherence to therapy. Moreover, patients should receive follow-up or tracking within 4 weeks after the initiation of therapy, so as to check the progress and tolerability of their treatment. After the desired control is achieved, the patient can undergo follow-up every 3–6 months for reevaluation. At each follow-up the pharmacist must evaluate the success of the current treatment and consider alternative therapies, if necessary; offer instructions to the patient regarding skin care and exacerbating factors; and provide support to the patient based on that individual's specific and unique needs (Adams, Coven, Grippe, 2016).

In short, it is of vital importance that the pharmacist alerts the patient of all the advice abovementioned in order to help treatment to be more effective, as the basis of treatment lies in avoiding the factors that can aggravate the symptoms (Fernandes, 2012).

CONCLUSION

Rosacea is a problematic, common, difficult to control disease that affects a large number of patients who require long-term treatment. Much remains unclear about the etiology and pathophysiology of rosacea (Elewski *et al.*, 2011).

The treatment of rosacea is still a challenge despite the various therapeutic options that are currently available. Providing comprehensive patient education to manage one's expectations of future results; similarly, offering information on skincare and the use of available therapies optimizes therapeutic success. Patient education and dermocosmetic advice should be highlighted, as they play an essential role in the control of this complex and chronic disease (Elewski *et al.*, 2011).

The present studies show the importance of proper skincare in individuals with rosacea; they also highlight how signs, symptoms, and skin irritation can be reduced (which can also be caused by the use of topical treatments), especially during the first week of application. Galenic investigations, made possible to produce rosacea-appropriate textures containing a limited number of ingredients and little or none fragrances or preservatives, which provide camouflage of lesions and redness, and are sufficiently fluid to be scattered and removed, without difficulty (Guerrero, 2011). However, the idea of achieving an ideal, universal, single complexion is utopian and impossible to achieve due to variations in skin type and

cultural differences in what are considered aesthetically acceptable or desirable facial appearances (Elewski *et al.*, 2011).

There are times when medical consultations result in poor communication with the patient (Del Rosso, Baum, 2008; Levin, Miller, 2011); as such, the pharmacist is the closest and most appropriate healthcare professional to complement and deepen any information that is provided. There is no doubt that adopting a dermocosmetic approach is crucial in controlling rosacea; this option must be considered for all patients, as it modulates the skin's quality and function.

In Europe and the United States of America, the category of dermocosmetics/cosmeceuticals is not recognized, as there has been a lack of validation of this class of products using standard methods. There are only reports of these "barrier products" that may result in future directives (Rodrigo *et al.*, 2010). The guidelines for testing cosmetic products will continue to evolve, and it is essential that safety and efficacy trials are carried out under rigorous methodologies in accordance with the latest adopted guidelines that can be reproducible and scientifically valid (Dreno *et al.*, 2014).

In brief, for dermocosmetic care and – more precisely – for the careful choice of products for rosacea management, the watchword to reiterate is "simplicity". Patients with rosacea should seek safety in their formulations of choice (i.e., it should contain few ingredients, and it should also be carefully selected and dermatologically tested). Patients should also use and apply makeup following use of a simple and effective dermatologic (if desired), given their sensitive and reactive skin condition.

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