

# Evidence of Barrier Deficiency in Rosacea and the Importance of Integrating OTC Skincare Products into Treatment Regimens

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## ABSTRACT

**Background:** Rosacea, an inflammatory skin disease that leads to an impaired skin barrier function, commonly involves the face. Symptoms of rosacea can be bothersome and include pain, stinging, burning, itching, and facial flushing. This review explored skin barrier impairment in rosacea and reduced symptomatology when using over the counter (OTC) skincare products.

**Methods:** Nine dermatologists (the panel) completed a survey on OTC products they recommend for rosacea. The survey results were summarized, presented, and discussed during the online meeting, together with the results of a literature review. The outcome of these discussions, coupled with the panel's expert opinion and experience, is shown in the current review.

**Results:** Addressing barrier dysfunction by use of moisturizer and cleanser formulations that restore skin hydration, normalize skin pH, restore the microbiome, and skin lipids can assist in improving rosacea signs and symptoms. The panel's consensus was that in addition to the use of prescription medications, skincare recommendations are a crucial part of successful rosacea therapy. In addition to occlusives and humectants, barrier restoring ingredients such as ceramides, hyaluronic acid, and niacinamide were considered beneficial. Equally important was the absence of potentially irritating substances.

**Conclusions:** The use of OTC products can improve rosacea symptomatology and signs. As adjuncts, these products are recommended before and during prescription therapy and as part of a maintenance regimen.

*J Drugs Dermatol.* 2021;20(4):384-392. doi:10.36849/JDD.5861

## INTRODUCTION

Rosacea is a chronic skin disorder characterized by inflammation and vasculopathy.<sup>1-3</sup> About 5%–10% of the population is affected by rosacea, which has been said to be most prevalent in Caucasian women from the Northern hemisphere; this is likely due to reporting bias.<sup>3</sup> Additionally, numerous recent reports highlight rosacea in other skin phototypes including in Asian and African populations.<sup>4,5</sup> Genetic factors play a clear but ill-defined role.<sup>3,4</sup> Commonly involving the central face, rosacea lesions and

erythema are most prominent on the cheeks, forehead, chin, and nose.<sup>1,2,4</sup> Symptoms of rosacea include stinging, burning and itching, and facial flushing.<sup>1,2,4,6-8</sup> Recently the classification of rosacea has been revamped.<sup>1,2,6</sup> Numerous expert groups are now recommending a more patient-focused phenotype approach due to shortcomings in the classification of rosacea by subtypes. The former more accurately reflects the myriad clinical presentations of rosacea patients rather than artificially conflating them into subtype categories. Additionally,

therapeutic approaches need to consider all aspects of a patient's presenting features as there is no single medication that addresses them all.<sup>1,2,6</sup>

Patients often report disease flares triggered by environmental factors and food/drink consumption. Various stimuli that promote vasodilation, such as sun exposure, hot or spicy food, drinks, alcohol, physical exercise, high-temperature environments, or abrupt changes of temperature, may trigger disease flares.<sup>1,2</sup> Vasodilators (eg, antihypertensives) or angiogenic drugs (eg, topical corticosteroids) may also induce rosacea exacerbation.<sup>1,2</sup>

Frequent and repeated flushing may cumulatively lead to progressive damage of the endothelium, angiogenesis, and inflammatory changes in the dermis.<sup>9</sup> Studies evaluating barrier dysfunction in rosacea demonstrated that inflammation could cause or prolong flares and worsen symptoms.<sup>9,10</sup>

This article explores the role of skin barrier impairment in rosacea and the effect of over the counter (OTC) skincare products in improving barrier function and disease symptomatology.

## MATERIALS AND METHODS

A panel comprised of nine dermatologists from the US and Canada (the authors) convened a webinar meeting on October 10, 2020. The online conference replaced a face to face meeting that was canceled due to the COVID-19 pandemic.

Topics for discussion included: What is the evidence that rosacea is a barrier defect disorder? What role does quality skincare play in the therapeutic algorithm? Are there particular ingredients that skincare products designed for rosacea patients should contain? Are there ingredients that should be avoided?

Prior to the meeting, panel members completed a survey on OTC skincare products recommended for rosacea patients in their practice. The survey examined which OTC products were recommended for rosacea monotherapy, an adjunct to prescription medications, and maintenance therapy.

The results of the survey were summarized, presented, and discussed during the online meeting. The outcome of these discussions, coupled with the panel's expert opinion and experience, is shown in the current review.

Clinical guidelines, algorithms, and evidence-based recommendations describing current practice for rosacea were culled from the literature through August 2020. Literature in the English language from 2015 to July 2020 was selected for clinical relevance, addressing aspects of rosacea related to skin barrier impairment and management using OTC skincare.

## Rosacea Pathophysiology and the Role of the Stratum Corneum Permeability Barrier

### *Rosacea pathophysiology*

The pathophysiology of rosacea has yet to be fully elucidated. The current model implicates two main physiologic components: an upregulated and dysregulated innate immune system and neurovascular dysregulation, both of which are triggered by genetic and exogenous factors. Consequently, this results in the activation of inflammatory cascades culminating in chronic inflammation and acute and chronic changes in the facial vasculature.<sup>1,11-14</sup> Innate immune dysfunction in rosacea promotes photosensitivity and vascular adhesion molecule expression.<sup>14</sup> Additionally, impairment of the skin barrier may play a role in disease occurrence and severity. However, it is unclear if this is causative for rosacea or if it results from the existence of diseased rosacea skin.<sup>12,15</sup>

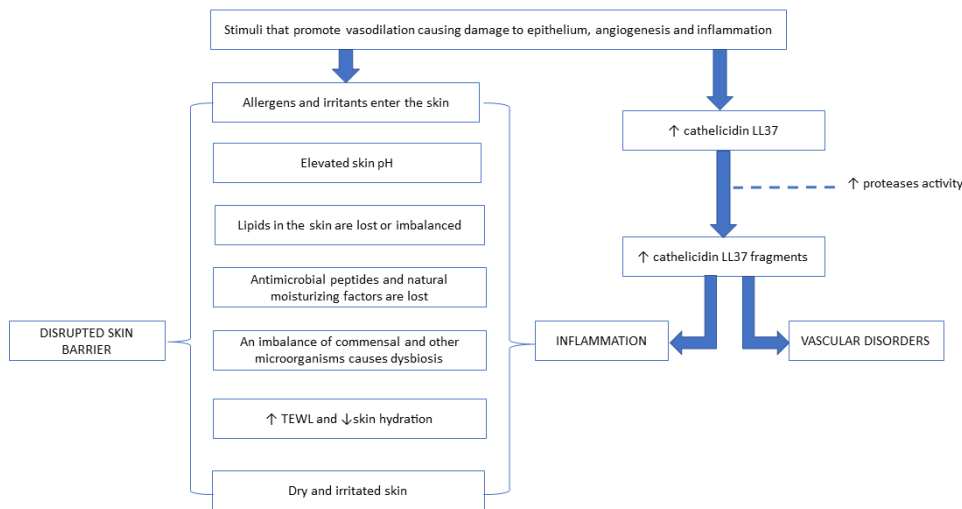
### *Skin barrier composition and function*

The skin barrier consists of enucleated protein-rich corneocytes with highly organized intercellular lipids interspersed around and between them. The organization of these two components has often been compared to a brick-and-mortar wall. But this static view does not consider the dynamic nature of the highly organized remodeling that occurs as the stratum corneum is created. Corneocytes are the building blocks of the epidermal barrier. A water-resistant layer of lipid lamellae encases the corneocytes (cornified lipid envelope), preventing water loss and controlling barrier permeability.<sup>15,16</sup> Together, these two components serve as a nearly impenetrable interface between the body and the outside world.<sup>15,16</sup>

The intact barrier prevents excess water loss and serves to thwart the ingress of toxins and microorganisms. Harsh chemicals, surfactants, exfoliants, and aggressive cleansers – especially those with a high pH – can damage the skin barrier. Disease processes such as atopic dermatitis (AD), psoriasis, and acne may cause a barrier deficiency due to their inflammatory nature.<sup>16,17</sup> Conversely, exogenously created barrier dysfunction (including dysbiosis of the cutaneous microbiota) may cause or exacerbate the disease state.

### *The role of skin lipids in the healthy skin barrier*

The skin lipids play a particularly significant role in barrier function. They are produced in the lamellar bodies of the stratum granulosum during keratinocyte differentiation. The intercellular lamellar lipid membrane is primarily composed of roughly equimolar concentrations of ceramides, cholesterol, and free fatty acids, which play a vital role in the physiological maintenance of SC hydration.<sup>20,21</sup> The physiologic SC lipids comprise approximately twenty percent of the volume of the SC and are composed of ceramides (CERs) (40–50%), cholesterol (25%), and free fatty acids (10–15%).<sup>18-22</sup> The lipids' composition and organization are crucial to allow the formation

**FIGURE 1.** Inflammation vascular disorders and a disrupted skin barrier in rosacea.Adapted from Addor.<sup>7</sup>

Stimuli that promote vasodilation, such as sun exposure, hot or spicy food, and drinks, alcohol, physical exercise, high-temperature environments, or abrupt changes of temperature, may trigger rosacea.<sup>12</sup> Vasodilators (eg, antihypertensives) or angiogenic drugs (eg, topical corticosteroids, topical tretinoin) may also induce rosacea.<sup>12</sup> It is thought that flushing may lead to progressive damage to the endothelium and also angiogenesis, as well as inflammatory changes in the dermis.<sup>4</sup>

of a highly ordered 3-dimensional structure. Ceramides – of which there are many varieties – compose about 50% of the total lipids and are highly location-specific. Abnormalities in ceramide composition alter the stratum corneum's physiologic properties and contribute to barrier dysfunction and disease. Ceramide levels are reduced or structurally aberrant in psoriasis, ichthyosis, acne, AD, and skin damaged by surfactants.<sup>3,18-22</sup> The use of ceramide-containing skincare products has been shown to restore ceramide composition and improve skin function and disease severity.<sup>23-26</sup>

#### Evidence for barrier dysfunction in rosacea

Although physicians may accept that rosacea is a barrier defect disorder, data have been primarily circumstantial until recently. Data that point to barrier deficiency in rosacea includes evidence of increased trans-epidermal water loss (TEWL), decreased skin hydration, increased stratum corneum (SC) pH, increased lactic acid stinger reaction, symptoms of itch, burn, and sting, and an increased incidence of irritant and allergic contact dermatitis.<sup>9,27-31</sup> Still lacking is the identification of specific lipid abnormalities in rosacea-prone skin.

TEWL and skin hydration in both rosacea and AD were evaluated in a study exploring skin barrier function.<sup>9</sup> The skin's irritation threshold to different sodium lauryl sulfate concentrations was assessed on the volar forearm and nasolabial fold in ninety-one patients with AD, rosacea, and healthy individuals. TEWL was higher ( $P=0.127$ ) in AD patients compared to rosacea, which exceeded that of healthy patients. Skin hydration was decreased equally in atopic and rosacea patients compared to

controls. Patients with AD showed enhanced susceptibility to sodium lauryl sulfate in comparison with rosacea and healthy subjects. In the rosacea patients, skin barrier impairment was limited to the area affected by rosacea, indicating that rosacea as an inflammatory disease is not generally related to an impaired barrier function, unlike AD. The authors, therefore, theorized skin physiology deterioration to be a consequence of inflammation.<sup>9</sup>

A study evaluating 135 patients with rosacea found that the erythematotelangiectatic form of rosacea occurs more frequently in dry skin than in seborrheic skin, while normal sebum levels were found in those with the predominantly papulopustular disease.<sup>7</sup> However, the authors did note an imbalance in fatty acid concentration in patients with papulopustular disease that may influence skin barrier integrity. Notably, a significant reduction in skin hydration level persisted even after clinical improvement with oral minocycline.

Lonne-Rahm and co-workers evaluated a 5% lactic acid stinging reaction in 32 rosacea patients.<sup>29</sup> This test is used to measure subjective skin irritation and constitutes a clinical measure of barrier function. Twenty-five patients were identified as having papulopustular disease, while seven had the erythematotelangiectatic type. They were compared to 32 healthy individuals. All patients with vascular disease were considered "stingers," compared to 68% of those with papules, pustules, and 19% of controls. SC permeability disruption was presumed to be the cause of the heightened response.

These data point to a barrier dysfunction in rosacea, although the etiology and pathomechanisms are ill-defined. It is believed that the impaired epidermal barrier facilitates the entry of irritants and allergens, causing hypersensitivity to exogenous stimuli, vasodilation, and inflammation. This promotes the development of a cycle of disease and periodic exacerbations. What is unknown is the chicken/egg conundrum: does an initial barrier defect trigger the derangements in vascular and immune system function that we call rosacea? Or does the inflammatory storm and vascular dysregulation elicit a barrier dysfunction? Or, to muddy the waters further, does genetic predisposition lead to the simultaneous development of neurovascular and immune dysregulation, both of which may contribute to barrier dysfunction?

Regardless of its origin, clinically, the disturbed barrier often translates into a situation where patients are too irritated to permit the use of the medications and products that would otherwise result in clinical improvement.

#### *Integration of OTC Skincare Products into a Rosacea Regimen*

The panel determined that addressing barrier repair early in the treatment phase, continuing such care through acute treatment, and the maintenance phase is paramount in rosacea management.

The panel explored recent guidelines and algorithms for rosacea management to provide a basis for OTC recommendations.<sup>2,6,32-35</sup> We considered that selected treatment might need to take into account patient phenotype (eg, transient and persistent erythema, papules and pustules, flushing, ocular disease, prominent symptomatology, telangiectasia, and phyma), personal circumstances, preferences, cost, and availability of treatment.<sup>2,6,8,32-35</sup>

#### *Prescription Treatment for Rosacea*

Guidelines recommend that persistent erythema be treated with topical brimonidine or topical oxymetazoline.<sup>2,6,32,33,35,36</sup> Patients with both erythema and telangiectasia may benefit from laser and intense pulsed light therapy.<sup>2,6,32,33,35,36</sup>

FDA-approved therapy for the papules and pustules of rosacea includes oral doxycycline 40 mg modified-release (MR), topical azelaic acid, topical metronidazole, topical ivermectin, and most recently, topical minocycline foam. Although isotretinoin is not FDA approved for this indication, it is effective for most aspects of recalcitrant disease and phymas.<sup>2,6,32,33,35,36</sup> Further treatment options for the papules and pustules of rosacea include antibiotic doses of doxycycline and minocycline, although antibiotic resistance concerns preclude long-term use.<sup>2,6,32,33,35,36</sup> Ocular rosacea may benefit from oral omega-3 fatty acids and responds to topical ivermectin, doxycycline 40 mg MR, and tetracycline-class antibiotics.<sup>2,6,32,33,35,36</sup> Since patients

often present with heterogeneous phenotypes, combination treatment may be necessary.<sup>32,35,36</sup>

#### *OTC Skincare Products for Rosacea*

Skin barrier function includes physical, chemical, and immunological barriers to the ingress of noxious environmental toxins.<sup>37</sup> Additionally, skin pH plays an important role in the barrier function. Normal barrier function is dependent on the complex interplay of stratum corneum pH and exogenous and endogenous processes.<sup>31,37</sup> Lipid processing and formation of lamellar structures require an acidic skin pH. Further, elevated skin pH may delay barrier recovery and facilitate skin barrier breakdown.<sup>31,38,39</sup> This is particularly well documented in AD, but also rosacea.<sup>40</sup> Normalizing pH using acidic topical skincare products contributes to skin barrier repair, normalization of the microbiome, and the reduction of inflammation.<sup>40</sup>

Skincare considerations in rosacea include cleansers, moisturizers and UV protection.<sup>32,33</sup> Guidelines recommend skincare with gentle cleansers and moisturizers to relieve/prevent dry skin, improve irritation symptoms, and restore skin barrier function.<sup>2,6,32,33,35,36</sup>

The global ROSacea COnsensus (ROSCO) guidelines emphasize the importance of skincare as part of rosacea's treatment and maintenance approach.<sup>2</sup> According to the guidelines, skincare should include a gentle cleanser, avoidance of topically applied triggers, use of a moisturizer containing humectants and barrier lipids such as ceramides or hyaluronic acid, and a sunscreen.<sup>2,7,31</sup> Camouflage products may be used to reduce the visibility of the disorder. Although avoidance of environmental stimuli (sun, cold, hot), emotional stimuli (stress and anxiety), physiological stimuli (alcohol, caffeine, spicy foods, strenuous exercise) is thought to prevent flares and reduce symptoms, achieving these goals is difficult and often patient adherence may be impractical.<sup>33</sup>

#### *Skin cleansers*

An effective and safe skin cleanser aims to remove pollutants, debris, and harmful bacteria from the skin without disrupting or removing the beneficial lipids, proteins, and normal flora that contribute to the skin barrier's integrity and function.<sup>31,37,39,41,42</sup> Physiological stratum corneum pH is acidic (4–6), while the body's internal pH is neutral to slightly alkaline (~7.4).<sup>31,40</sup> Imbalance in the skin surface pH can inhibit lipid processing and can lead to dysbiosis, which is recognized as an associated factor in inflammatory dermatoses.<sup>31,38,41</sup> Cleansers with an elevated pH can damage the stratum corneum or strip it of essential components, such as lipids, proteins, and natural moisturizing factor (NMF).<sup>31,38,41</sup>

Considerations for choosing the ideal cleanser for rosacea-prone skin involves inclusion as well as omission of key ingredients.

Ingredients that may induce skin irritation, such as alcohol, acetone, benzyl alcohol, propylene glycol, butylene glycol, and acids (alpha, beta-hydroxyacids) should be avoided.<sup>39</sup> Surfactants are an integral component of cleansers but may be a source of irritation. They are amphiphilic molecules with a hydrophobic, water-insoluble tail and a hydrophilic, water-soluble head and thus can adsorb at the interface of water and oil.<sup>39</sup> They can be anionic, cationic, amphoteric, or non-ionic. Anionic agents such as sodium lauryl sulfate or quaternary ammonium can induce skin irritation.<sup>31,38,41</sup> The use of abrasive cleaners may damage the stratum corneum, compromising the skin barrier's permeability, exacerbating rosacea.<sup>41</sup> Lastly, cleansers containing antimicrobial agents such as some combars should be avoided due to their high pH (10–12) and propensity to cause cutaneous dysbiosis.<sup>41</sup>

Non-greasy, oil-free liquid cleansers and syndet (synthetic detergent) cleansers have a near physiologic pH (4–7) and do not contain true soap.<sup>41</sup> Both are helpful for skin that is prone to irritation and dryness (Table 3).<sup>7,31,38,41</sup> These gentle cleansers support skin barrier repair, decrease inflammation, accelerate pH recovery, and support the skin's antimicrobial defense.<sup>31,41</sup>

The addition of hydrating agents to cleansers can provide both hygiene and moisturization. An example discussed by the panel is a ceramide and hyaluronic acid-containing cleanser with a near-physiological pH of 5.5. In addition to providing hydration, the product utilizes a technology (Multi Vesicular Emulsion), which releases the moisturizing ingredients slowly over time, providing long-term hydration.<sup>24,42</sup>

Patient behavior modification must also be considered. Patients should be advised to discard all cleansing brushes and scrubs, to avoid vigorous cleansing, and to wash the face using a gentle motion with the fingertips.<sup>6</sup> Avoiding hot or cold water may decrease irritation and avoid triggering flushing and irritating the already sensitive skin.<sup>7,39,41</sup>

### Moisturizers

The past decade has seen considerable advances in the understanding of moisturizers and barrier maintenance and repair. Effective moisturizers can restore and maintain skin barrier function, enhance skin hydration, and reduce the likelihood of skin irritation.<sup>2,6,7,32–35,42</sup> Moisturizers are composed of humectant, occlusive, and emollient ingredients that attract water, seal in moisture, and smooth and soften the skin.<sup>4</sup> Increased knowledge of skin barrier function has led to the development of moisturizers containing physiologic lipids such as ceramides, which may help replace the deficient lipids in inflammatory skin disorders characterized by skin barrier impairment.<sup>31,33,41–43</sup> In the treatment of rosacea-prone skin, moisturizers relieve dry skin, reduce symptoms (pruritus, stinging, burning) improve skin texture, and reduce erythema.

As such, they can be helpful as monotherapy or as adjuncts to rosacea prescription therapies.<sup>2,6,8,32–35</sup> An ideal moisturizer for rosacea patients would be safe, effective, affordable, and fragrance- and sensitizing agent-free. Preferably, the product would be pleasant to use with a look, smell, and feel that it invites consistent use. OTC skin care product choice may differ between gender, skin type, and skin condition, and the clinician is urged to consider patient preference.<sup>43</sup>

There are many types of OTC moisturizers available to recommend to our rosacea patients. However, robust comparative studies are scarce.<sup>44</sup> Most of the information comes from open-label studies, case reports, or small case series and studies that combine biophysical measurements (corneometry and trans-epidermal water loss) with clinical assessment.<sup>42,44,45</sup>

A multicenter, open-label study (N=102) showed that a skincare regimen consisting of a mild cleanser and moisturizer could help maintain skin barrier integrity and reduce rosacea symptoms.<sup>45</sup> Two small clinical studies evaluated a tinted daily SPF-30 facial moisturizer used for dry skin or as part of the skincare regimen for rosacea patients.<sup>46</sup> The first assessed the improved barrier function in twenty-one healthy women with dry skin. After a single moisturizer application, an increase of electrical capacitance and a significant decrease in TEWL was observed at 2-, 4-, and 8-hour assessments compared to baseline.<sup>46</sup> In the second study, the efficacy and tolerability of a once-daily moisturizer used for twenty-two days in thirty-three females with mild-to-moderate rosacea and non-transient erythema were evaluated. The study revealed that skin redness improved after day one compared to baseline. Both image analysis and chromameter readings showed that redness was significantly lower on the day 22 assessment than baseline.<sup>46</sup> Further, patients reported that the product was well tolerated and noted a reduction of skin dryness at three days, one and three-week evaluation.<sup>46</sup>

The evaluation of barrier function in multiple inflammatory skin conditions has shown that ceramide levels are decreased in atopic dermatitis, acne vulgaris, psoriasis, and ichthyosis.<sup>17–20</sup> Although presumed, ceramide abnormalities have not been evaluated in rosacea patients. Nevertheless, the use of ceramide-containing moisturizers and cleansers plus moisturizer has been shown to improve symptoms and disease severity in atopic and psoriatic patients.<sup>26</sup> Most recently, Draelos 2020 showed that the use of a ceramide-containing moisturizing cream on dry lower leg skin of 49 women resulted in an 11% increase in total ceramide content, a 14% increase in free fatty acids, and an 11% increase in cholesterol.<sup>24</sup> Most importantly, this increase in ceramide content was still demonstrable after 48 hours. Specifically, microvesicular technology mentioned previously traps ingredients into layers which dissolves slowly over a sustained period.<sup>42</sup> The reduction of symptoms in many

inflammatory disorders has been demonstrated following the use of quality skin care.<sup>24,26,42</sup> Last, skincare containing mineralizing thermal water has been used to protect the skin against exposome factors causing skin irritation.<sup>48</sup>

**Sunscreen**

Sun exposure is a well-known contributory factor to rosacea.<sup>1,2,4</sup> Guidelines recommend, and the panel agreed, that sun avoidance and sunscreen with a sun protection factor (SPF) of at least 30 are necessary for rosacea patients.<sup>2,6,8,32-35</sup>

A moisturizer with an SPF 50+ was shown to be beneficial in adults with rosacea-prone sensitive skin.<sup>47</sup> After three weeks of product application, there was a reduced feeling of dryness, itching, and burning of the patients' skin.<sup>47</sup> The well-tolerated product was easy to incorporate into the daily skincare regimen.<sup>47</sup> Similar results were shown with a tinted

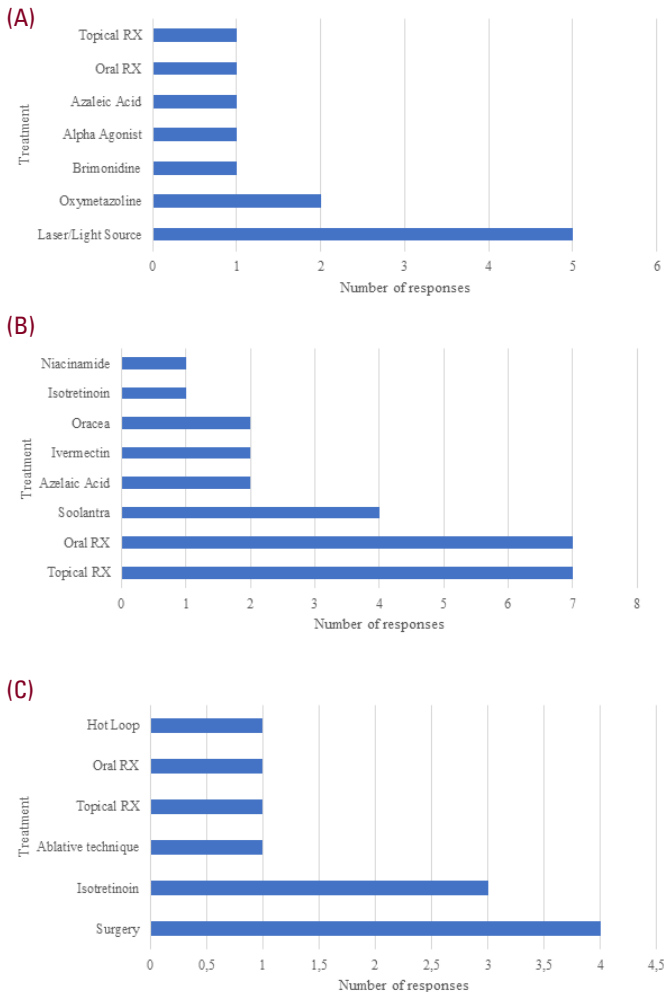
daily SPF-30 facial moisturizer used for dry skin or as part of the skincare regimen for rosacea patients.<sup>46</sup>

**Survey on OTC skincare**

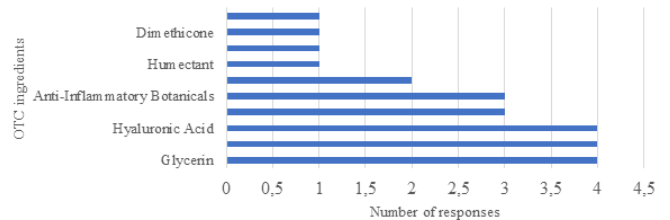
Panelists completed a pre-meeting survey regarding the composition of their rosacea practice, prescribing habits, and OTC skincare recommendations. The goal was to ascertain at what therapeutic junction the OTC products would be recommended, and the important ingredients to be included and omitted in the ideal OTC regimen.

Although the bulk of patients display combination features, patients with pure erythematotelangiectatic, papulopustular, and phymatous rosacea were considered for the sake of the discussion. Respondents indicated that their typical rosacea patient presented with fully erythematotelangiectatic rosacea (30%–40%), fully papulopustular rosacea (30%–60%), and fully phymatous rosacea (5%). For the treatment of fully vascular rosacea, the physicians used laser or a light source (62.5%), oxymetazoline (25%), and brimonidine (12.5%). Treatment of fully inflammatory rosacea included topical medications (87.5%) such as ivermectin 1% cream (50%), azelaic acid (15%) and niacinamide (12.5%), and oral medications (87.5%) including doxycycline (25%) and isotretinoin 0.5 mg/kg (12.5%). Fully phymatous rosacea was treated primarily with procedural methods (50%) and oral isotretinoin (37.5%) (Figure 2). These recommendations are in concordance with published guidelines and treatment algorithms.<sup>2,4,8,32-35</sup>

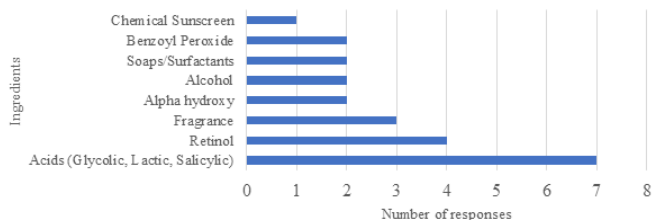
**FIGURE 2.** Pre-meeting survey: What do you use to treat each type of rosacea? (A) Erythematous rosacea (N = 8) (B) Papulopustular rosacea (N = 8) (C) Phymatous rosacea (N = 8).



**FIGURE 3.** What OTC Ingredients do you consider to be the most important for your rosacea patients? (N = 8)



**FIGURE 4.** What OTC ingredients should absolutely not be used on your rosacea patients? (N = 8)



The panel was asked to identify the OTC skincare products they recommend for rosacea monotherapy, adjunctive therapy, and maintenance therapy. Their answers included cleansers, moisturizers, sunscreens, anti-redness, and anti-inflammatory products. The OTC products recommended for monotherapy comprised ceramide-containing cleansers and moisturizers, mineral sunscreens, anti-redness creams, niacinamide-containing lotions, and azelaic acid 10%. (Table 1).

For adjunctive therapy, their choices comprised facial cleansers

**TABLE 1.****Pre-Meeting Survey First, Second, and Third Choice Monotherapy With OTC products (N = 8)**

Product	First choice	Second choice	Third choice
Gel cleanser <sup>a</sup>	1	--	--
Ceramides containing skincare <sup>b</sup>	3	1	3
AR serum <sup>c</sup>	1	--	--
Corrective gel <sup>d</sup>	1	--	--
Sunscreen	1	--	--
None	1	2	3
Azelaic acid 10%	--	1	--
M89 moisturizer <sup>e</sup>	--	1	--
T cleanser <sup>c</sup>	--	1	--
Anti-redness SPF 20 cream <sup>f</sup>	--	1	--
Cleanser <sup>f</sup>	--	1	--
Facial cleanser <sup>g</sup>	--	--	1
Vitamin Bs containing lotion <sup>d</sup>	--	--	1

SpectroGel cleanser, GSK<sup>®</sup>; CeraVe cleanser and moisturizer, CeraVe<sup>®</sup>; Rosaliac AR Intense Visible Facial Redness Serum, Toleriane cleanser, La Roche-Posay (LRP)<sup>®</sup>; Phyto corrective gel, Metacell lotion, SkinCeuticals<sup>®</sup> Mineral 89 Hyaluronic Acid Face Moisturizer, Vichy<sup>®</sup>; Cetaphil cleanser, Cetaphil Redness Relieving Daily Facial Moisturizer SPF 20, Galderma laboratories<sup>®</sup>; Neutrogena facial cleanser, Neutrogena<sup>®</sup>

**TABLE 3.****Pre-Meeting Survey First, Second, and Third Choice OTC Skincare Product for Maintenance Therapy (N = 6/8)**

Product	First choice	Second choice	Third choice
Ceramides containing skincare <sup>a</sup>	--	--	1
AR serum <sup>b</sup>	1	1	--
Same product that worked previously	4	4	--
T cleanser and moisturizer <sup>b</sup>	1	--	--
Cleanser and anti-redness SPF 20 cream <sup>c</sup>	--	1	--
Sunscreen <sup>d</sup>	--	--	4

CeraVe cleanser and moisturizer, CeraVe<sup>®</sup>; Rosaliac AR Intense Visible Facial Redness Serum, Toleriane cleanser, La Roche-Posay (LRP)<sup>®</sup>; Cetaphil cleanser, Cetaphil Redness Relieving Daily Facial Moisturizer SPF 20, Galderma laboratories<sup>®</sup>; EltaMD UV clear sunscreen, EltaMD skincare<sup>®</sup>

and moisturizers with various ingredients. Ceramide containing skincare and a corrective gel was recommended by 37.5% of physicians. A cleanser and anti-redness cream was used by 37.5%, and a gentle cleanser, a moisturizer with SPF, or various types of serum was recommended by 25% of physicians (Table 2).

For rosacea maintenance, the panel responded that their recommendations were unchanged from their acute recommendations (Table 3).

**TABLE 2.****Pre-Meeting Survey First, Second, and Third Choice Monotherapy With OTC products (N = 8)**

Product	First choice	Second choice	Third choice
Ceramides containing skincare <sup>a</sup>	3	1	2
AR serum <sup>b</sup>	--	--	2
Corrective gel <sup>c</sup>	3	--	--
None	--	--	2
T cleanser and moisturizer <sup>d</sup>	1	--	1
Cleanser and Anti-redness SPF 20 cream <sup>e</sup>	--	3	--
Vitamin Bs containing lotion <sup>c</sup>	--	--	1
Cleanser and lotion with SPF <sup>f</sup>	1	--	--
Forte cream <sup>g</sup>	--	1	--
A serum <sup>h</sup>	--	1	--
AR serum <sup>b</sup>	--	1	--
NP serum <sup>i</sup>	--	1	--

CeraVe cleanser and moisturizer, CeraVe<sup>®</sup>; Rosaliac AR Intense Visible Facial Redness Serum, Toleriane cleanser, La Roche-Posay (LRP)<sup>®</sup>; Phyto corrective gel, Metacell lotion, SkinCeuticals<sup>®</sup>; Toleriane cleanser and moisturizer, La Roche-Posay (LRP)<sup>®</sup>; Cetaphil cleanser, Cetaphil Redness Relieving Daily Facial Moisturizer SPF 20, Galderma laboratories<sup>®</sup>; Aveeno Ultracalming cleanser and lotion with SPF, J&J<sup>®</sup>; Avene Antirougeurs forte cream, Avene<sup>®</sup>; Skin Better Alto Defense serum, Skin Wellness Dermatology<sup>®</sup>; Neocutis Peche, LovelySkin<sup>®</sup>

**TABLE 4.****Types of Cleansers**

Type of cleanser	Ingredients	pH
Soap	Fat and alkali-treated salts or fatty acids	9.0–12.0
Syndet bar	Synthetic detergents and small amounts of soap	4.0–6.0
Combar	Equal parts of soap mixed with synthetic detergent	10.0–12.0
Liquid cleanser	Synthetic ionic or anionic detergents in lotion, cream, oil or gel form	6.0–7.0
Non-greasy cleanser	Synthetic cleanser that may contain ceramides	5.0–7.0
Multivesicular emulsion system based cleanser	Cleanser with multivesicular emulsion system and ceramides	4.0–6.0

Adapted from Lynde CW et al. *J Drugs Dermatol* 2019;18(12)S-1:1-16.<sup>31</sup>

**CONCLUSION**

Rosacea is a disease of skin inflammation that leads to derangements in skin barrier function. This contributes to the sensation of pain, burning, itching, stinging so often bothersome in those affected. Addressing barrier dysfunction by using moisturizer and cleanser formulations that restore skin hydration, normalize skin pH, and restore the microbiome and skin lipids can help improve rosacea signs and symptoms.

The panel's consensus was that in addition to the use of prescription medications, skincare recommendations are a crucial part of successful rosacea therapy. Participants noted that the use of quality OTC products could improve rosacea symptomatology and severity in and of themselves. As adjuncts, these products are recommended before and during prescription therapy and as part of a maintenance regimen.

The importance of providing the patients with specific branded recommendations was discussed both in terms of the presence of reparative actives and the omission of irritating substances. In addition to occlusives and humectants, barrier restoring ingredients such as ceramides, hyaluronic acid, and niacinamide were considered beneficial. Equally important was the absence of potentially irritating substances. In particular, cleansers with harsh surfactants, antibiotics, and elevated pH can strip lipids, proteins, and NMF, thereby stimulating inflammation.

Patients benefit from specific recommendations when faced with the bewildering array of options in the pharmacy skincare aisle. The wrong choice can derail an otherwise ideal therapeutic approach.

**Limitations**

There are many types of OTC skincare products available; however, robust comparative studies on their use for rosacea are scarce. Information from studies that combine biophysical measurements with clinical assessment may help to make an informed choice.

**DISCLOSURES**

The authors disclosed receipt of an unrestricted educational grant from CeraVe USA for support with this work's research. The authors also received consultancy fees for their work on this project.

All authors contributed to the development and review of this work and agreed with the content.

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