

A Review of the Challenges and Nuances in Treating Rosacea in Asian Skin Types Using Cleansers and Moisturizers as Adjuncts

Kanokvalai Kulthanan MD,^a Anneke Andriessen PhD,^b Xian Jiang MD PhD,^c
Chih-Hung Lee MD PhD,^d Cheng-Feng Zhang MD PhD^e

^aDepartment of Dermatology, Faculty of Medicine Siriraj Hospital, Mahidol University, Bangkok, Thailand

^bAndriessen Consultants and Radboud University, Nijmegen, The Netherlands

^cDepartment of Dermatology, West China Hospital, Sichuan University, Chengdu, China;

Laboratory of Dermatology, Clinical Institute of Inflammation and Immunology (CIII),

Frontiers Science Center for Disease-Related Molecular Network, West China Hospital, Sichuan University, Chengdu, China

^dDepartment of Dermatology, Kaohsiung Chang Gung Memorial Hospital

and Chang Gung University College of Medicine, Kaohsiung, Taiwan

^eDepartment of Dermatology, Huashan Hospital of Fudan University, Shanghai, China

ABSTRACT

Background: Rosacea is primarily an inflammatory disease of facial skin associated with impaired skin barrier function. While it is commonly thought of as a Caucasian person's disease, it is likely underdiagnosed in people of color, including Asians, leading to missed and delayed diagnoses and increased morbidity. The purpose of this review is to highlight literature on rosacea in Asian people and the role of non-prescription skincare in managing rosacea.

Methods: Four dermatologists (the panel) completed pre-meeting surveys and participated in a web meeting to discuss the role of skin care in treating rosacea in the Asia Pacific (APAC) region. The survey results were summarized, then presented during the virtual meeting. These survey results and relevant papers identified through a literature review were then discussed. This review shows the fruit of these discussions, as well as the advisors' expert opinions and experiences.

Results: The panel crafted 5 consensus statements regarding the role of skin care in the treatment of rosacea in the APAC region. The most common forms of rosacea seen by the advisors are mostly erythematous and papulopustular. Among the panel, doxycycline is the most popular treatment for papulopustular rosacea. The panel prioritize gentleness when choosing skincare products for patients with rosacea.

Conclusions: In Asian patients with rosacea, adjunctive skincare is an important part of treatment, maintenance, and prescription treatment. Given the highly sensitive skin of certain Asian patients with rosacea, avoiding potentially irritating substances is crucial.

J Drugs Dermatol. 2023;22(1):45-53. doi:10.36849/JDD.7021

INTRODUCTION

An inflammatory skin disease associated with impaired skin barrier function, rosacea commonly involves the face.¹⁻³ Symptoms of rosacea can be bothersome and include pain, stinging, burning, itching, and facial flushing.¹⁻⁴ Triggers include alcohol, cold, heat, physical activity, stress, spicy food, and ultra-violet light.^{5,6}

An estimated 5.46% of the global adult population has rosacea, and it is most common in women 30 years and older.⁵ Because rosacea is often considered a disease of patients with Fitzpatrick skin phototypes I and II, the mistaken notion exists that people with skin of color do not develop rosacea.⁷ In fact, rosacea is likely underrecognized in people of color,

and under-recognition can lead to misdiagnosis and delayed diagnosis and, therefore, greater morbidity.⁷ Various studies on Asian populations with rosacea have shown that patients may have their skin complaints on average 5 years before receiving effective treatment.⁸

Data characterizing rosacea in Asian skin types are limited, and the awareness of rosacea in this population is relatively low. To better understand the unique aspects of rosacea and nuances in the treatment approaches using cleansers and moisturizers in this population, 4 dermatologists from Asia (the panel) completed a survey on the non-prescription skincare products they recommend for rosacea.

MATERIALS AND METHODS

A panel comprised of 4 dermatologists from China, Taiwan, and Thailand participated in a web conference on December 3, 2021. The overarching purpose of the advisory board meeting was to discuss the role of skincare in treating rosacea in the APAC region. The specific objectives of the advisory board were to: 1) review best practices in managing rosacea and skin barrier dysfunction in Asians to develop statements for publication, 2) determine where prescription treatment and adjunctive skincare products fit in the treatment and maintenance algorithms for Asians with rosacea, 3) develop clinical statements on using prescription treatments and non-prescription skincare for the treatment and maintenance treatment of the cutaneous features of rosacea in Asians, and 4) develop a manuscript discussing these statements and the supporting clinical evidence.

Topics for discussion included: What are some key gaps in rosacea treatment in your region? What are the greatest rosacea education needs in your region? Do you feel you have the right skincare products for patients with rosacea? Is there a need for an APAC-specific rosacea treatment algorithm that includes skincare? What features do you expect in a skincare product for rosacea affected skin?

Pre-Meeting Survey

Before the meeting, the panel completed surveys on the percentage of rosacea subtypes they see in their offices; what they use to treat each type of rosacea (oral and topical, prescription and non-prescription); their first through third choices for non-prescription skincare for a) rosacea monotherapy, b) rosacea adjunctive therapy, and c) rosacea maintenance therapy; the ingredients most important to have and to avoid in non-prescription cleansers and moisturizers; other times to use non-prescription skincare for rosacea therapy; and preferred sunscreens. During the web conference, the panel discussed the summarized survey results. This review details these discussions, including the panel's expert opinions and experiences.

Structured Literature Review

Publications eligible for inclusion in the literature review were guidelines, consensus papers, and reviews describing current best practices in managing rosacea in Asians, including prescription treatment and non-prescription skincare for treatment and maintenance. Also meeting the inclusion criteria were clinical research studies on skincare and rosacea published in English from 2010 to 2021. Exclusion criteria were a lack of original data (unless a review article was deemed relevant) and publications in a language other than English.

The search terms were: rosacea in Asians, pathophysiology, skin barrier dysfunction in rosacea, lipid abnormalities in rosacea prone-skin, prescription treatment and maintenance,

rosacea guidelines, algorithm, consensus recommendations, prescription treatment, non-prescription skin care, rosacea skincare, and sunscreen use, cleanser and moisturizers for rosacea treatment, maintenance, adjunctive treatment, efficacy, safety, tolerability, skin irritation of skincare use, quality of life aspects, handling and comfort, treatment adherence.

A dermatologist and a physician-scientist performed the systematic literature search on November 16 and 17, 2021, in PubMed and Google Scholar. Two reviewers independently evaluated the results. Selected publications were graded based on reviewer consensus, and discrepancies were resolved with discussion.⁹

RESULTS

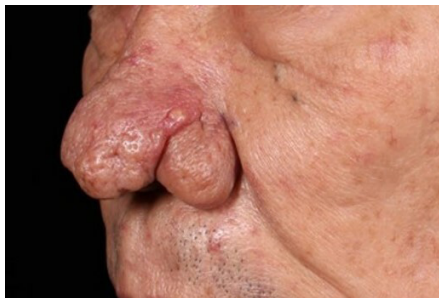
Of the 168 papers initially identified, 89 were excluded for lacking data on treatment, maintenance, or adjunctive skincare for Asian patients with rosacea. Of the 79 remaining papers, 30 were excluded on the basis of being duplicates, poor quality, or an older version of an updated review article. Of the remaining 59 papers, 33 were papers on Asian patients with rosacea, 16 were guidelines/algorithms/consensus papers, and one Chinese guideline was included in the Asian papers. The small number of clinical studies on skincare using cleansers and moisturizers for rosacea as an adjunct to treatment and maintenance did not allow for grading.

Results from the literature review are included, where appropriate, to support the following 5 panel-developed statements.

Statement 1: *Rosacea, an inflammatory skin disease that leads to impaired skin barrier function, commonly involves the face. Symptoms of rosacea can be bothersome and include pain, stinging, burning, itching, and facial flushing.*

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.⁶ According to the advisors, "Redness and flushing are generally the most challenging symptoms for our rosacea patients, and prescription products do not consistently meet this need." The advisors added, "We need to educate both doctors and patients about rosacea."

Published studies also support these experiences. In a multicenter cross-sectional study at 14 hospitals, researchers evaluated rosacea's epidemiologic and clinical features in patients in Korea using a questionnaire. The questionnaire addressed sociodemographic, rosacea severity and clinical features, and patient awareness of rosacea. Dermatologists used the standard classification and grading system to examine the patients and record rosacea subtype and severity.⁸

FIGURE 1. Erythematotelangiectatic rosacea.**FIGURE 2.** Erythematotelangiectatic and papulopustular rosacea.**FIGURE 3.** Rhinophyma.

Most subjects were female with a ratio of 2.45 to 1, female to male, and the average age was 47.9 years old. Most patients had mild disease ($n=417$, 71.9%) and a single subtype (83.8%) of rosacea, with erythematotelangiectatic rosacea (ETR) being the most common (Figure 1). The mixed subtype was present in 16.2% of patients, where ETR combined with papulopustular rosacea (PPR) was the most common (69.1% of that group) (Figure 2). The emotional change was the most common trigger (299 patients, 51.7%), and stress was the second most common (280 patients, 48.4%), followed by hot weather, hot bathing, and spicy food.

Only 4.7% chose, "I know rosacea specifically." The rest chose "I don't know rosacea at all" 47.4% ($N = 275$) or "I have heard about rosacea" 47.9% ($N = 278$). On average, patients had their "skin complaints" for 5 years. These numbers illustrate the need to increase the awareness of rosacea in Asian patients.

Another study focused on phymatous rosacea in Korean patients. This single-center, retrospective study in a Korean

Department of Dermatology evaluated 39 patients whose primary rosacea manifestation was phymatous rosacea. They found a male to female ratio of 6.8:1; most patients (90%) were older than 40 years old, and mild grade rhinophyma was most common (46.1%), followed by moderate (41.0%) and severe (12.8%) rhinophyma (Figure 3). Most patients (70%) had lesions limited to the nose. The time from onset to development of severe rhinophyma took an average of 8.2 years.¹⁰

As the above studies illustrate, Asian patients with rosacea can have classic symptoms of rosacea, yet rosacea awareness is not always optimal. The need to increase awareness of rosacea in this population is further underscored by the association of rosacea with systemic comorbidities, which has also been illustrated in Asian populations.¹¹⁻¹⁴

In a multi-institutional case-control study in 12,936 Korean patients with rosacea and 12,936 controls, researchers used logistic regression to identify significant associations between rosacea and multiple diseases.¹² They found a significant association between rosacea and Sjögren syndrome, systemic sclerosis, rheumatoid arthritis, ankylosing spondylitis, autoimmune thyroiditis, alopecia areata, vitiligo, lung cancer, hepatobiliary cancer, alcohol abuse, type 2 diabetes mellitus, obesity, allergic disease, allergic conjunctivitis, chronic rhinosinusitis, herpes infection, and HPV infection.

Women with rosacea were more likely to have Sjögren syndrome, systemic sclerosis, ankylosing spondylitis, thyroiditis, vitiligo, hepatobiliary cancer, and obesity. Males were more likely to have alopecia areata and alcohol abuse. People at least 50 years old were more likely to have vitiligo, lung cancer, and gastroesophageal reflux disease. Ages less than 50 years old were associated with hepatobiliary cancer, allergic conjunctivitis, and irritable bowel syndrome.

Regarding mental health, using the National Health Insurance Research Database of Taiwan from 2000 to 2013, researchers evaluated 7881 patients with rosacea and 31,524 age- and sex-matched controls to study the role of rosacea in certain psychiatric disorders. They found an increased adjusted hazard ratio for phobic disorder 7.841 (95% CI = 7.526-8.170, $P<0.001$), for obsessive-compulsive disorder 6.389 (95% CI = 6.132-6.657, $P<0.001$), and for all considered disorders (anxiety, phobic disorder, obsessive-compulsive disorder, personality disorder, manic disorder, major depressive disorder, bipolar disorder, schizophrenia, attention deficit hyperactivity disorder) the total adjusted HR was 2.761, $P<0.001$.¹³

Finally, to study the association between rosacea and cardiovascular diseases, associated comorbidities, and antihypertensive and antihyperlipidemic medications in Korea, researchers evaluated 2,536 patients with rosacea

identified through a 5-year retrospective, multi-institutional pooled analysis in 5 hospitals.¹⁴ They found a significantly ($P<.05$) increased risk of rosacea in patients with diabetes and dyslipidemia and in those treated with a β -blocker, α blocker, [beta]-hydroxy-[beta]-methylglutaryl coenzyme A (HMG-CoA) reductase inhibitor, and/or fibrates. However, patients taking an HMG-CoA reductase inhibitor who did not have dyslipidemia had a lower risk of rosacea ($P=.034$).¹⁴

Statement 2: *Differences in Asian skin may be clinically relevant in selecting topical treatment and skincare for these patients with rosacea.*

- Asian skin may be more prone to irritation to specific topical agents compared with other skin types, most notably White skin.
- Asian skin was reported to have an elevated neurosensory response to insults when compared with White skin and was more reactive than the skin of Black Americans.
- East Asian skin has been found to have the least skin barrier strength, the lowest degree of maturation, and, consequently, the highest degree of skin sensitivity compared with White or Black skin.

Not only are differences in Asian skin relevant in selecting topical treatments, but they are also relevant to diagnosis. While studies have found that PPR is more common in people with darker phototypes and ETR is more common in lighter phototypes, this may be an artifact of the difficulty of seeing erythema in richly pigmented skin.¹⁵ "Because erythema and telangiectasia might be difficult to recognize in darker skin, a heightened awareness of other signs and symptoms is warranted when evaluating a patient with richly pigmented."⁷ Helpful findings are: flushing, redness/erythema, burning/stinging with skincare products, failed acne treatments, difficult to treat symptoms, the presence of typical rosacea triggers, dry appearing skin, facial edema, and hyperpigmentation. Richly pigmented skin is more susceptible to post-inflammatory hyperpigmentation, which could conceal the erythema of rosacea.⁷

To help overcome the difficulty of diagnosing rosacea in patients with darker skin, clinicians can: search the family history for rosacea (people of color may have mixed ancestry), attempt to blanch the skin, eg, with a transparent device -- if the skin blanches, erythema is present; photograph the patient in front of a dark blue background to make erythema easier to see; examine the patient in a well-lit space and use a dermatoscope to identify telangiectasia; look for papules and pustules without comedones to differentiate from acne; look for thickening of the nose and medial cheek.⁷

Once the diagnosis has been made, clinicians can keep in mind findings that people of Asian heritage may have more sensitive

skin than other people as this may impact treatment. According to the advisors, "Rosacea patients tend to have hypersensitive skin and often complain that they cannot tolerate certain products. Flushing and redness are very common, especially in autumn and winter, as well as dryness and stinging. Moisturizers are needed that reduce irritation.

Asian skin may be more prone to irritation to specific topical agents compared with other skin types, most notably White skin.¹⁶ Asian skin was reported to have an elevated neurosensory response to insults when compared with White skin and was more reactive than the skin of Black Americans.¹⁷ Compared with White and Black skin, East Asian skin had the least skin barrier strength, the least maturation, and, consequently, the highest skin sensitivity.¹⁷

Statement 3: *Non-prescription products and skincare recommendations, in addition to the use of prescription medications, are a crucial part of successful rosacea therapy in all ethnicities.*

Patients with rosacea are known to have sensitive skin prone to burning, dryness, erythema, pruritus, scaling, and stinging.¹⁸ Furthermore, some studies suggest Asian people may have more sensitive skin than other people.^{16,17} Therefore it is crucial to select rosacea treatment that patients can tolerate.

In a retrospective case-control survey in China of 997 patients with rosacea and 1012 controls with healthy skin, the odds ratio (OR) of developing rosacea was increased in those with a history of allergic reaction to skincare products: OR = 5.110, 95% CI = 3.893–6.706, $P<.001$, and in those with a history of allergic reaction to skincare in beauty salons: OR = 3.002, 95% CI = 1.506–5.981, $P=.002$.¹⁹ A cross-sectional study of university students in China, including 310 patients with rosacea and 3,129 healthy controls, found that both frequent use of facial cleansers ($P=.03$) and extended baths ($P=.02$) were significantly associated with rosacea.²⁰ A retrospective, multi-center case-control survey study in China of 1,245 patients with rosacea and 1,538 controls with healthy skin found an association between rosacea and certain behaviors including: using a foaming cleanser (OR = 1.45, $P=.01$), wearing makeup more than 6 times a week (OR = 2.839, $P<.001$), applying a facial mask more than 4 times a week (OR = 2.56–3.069, $P<.001$), visiting the beauty salon than once a week (OR = 4.946, $P=.0018$), and using products from a beauty salon (OR = 2.334, $P=.0018$).²¹

Finally, data analysis in China of 999 patients with rosacea and 1010 controls with healthy skin also found an association between rosacea and certain skin-cleansing habits. These habits included washing the skin more than once a day (OR = 1.450), using more than 5 pieces of cleanser a year (ie, a large amount) (OR = 1.612), using a cleaning tool more than 4 times a week (OR

2.179), using exfoliating or oil-control products daily (OR 2.435), facial mask-use (OR 1.559) and deep cleaning of the skin at a beauty salon (OR 2.688).²²

On the other hand, studies in Asian patients with rosacea have also revealed what is beneficial. A preliminary observational study evaluated 6 middle-aged female Korean patients with rosacea treated with gauzes soaked with tranexamic acid (TA) solution. TA is an anti-fibrinolytic, and oral TA improves itching, swelling, and erythema and has been used to treat eczema, hives, and drug-induced irritation. The solution was applied for 20 minutes 1 or 2 times a week.²³ Erythema and subjective symptoms were assessed at baseline before treatment and at day 5. All patients had a markedly decreased erythema investigator quartile score (0 = none to 4 = very severe). The mean erythema decrease was 2.3. "Patients were satisfied because their skin felt cooled and soothed." The mean visual analog scale (VAS) (0–10) decreases were 3.8 for itching, 1.5 for flushing, and 3.5 for burning.²³

A prospective study of 28 patients (26 completed the study) with erythema from rosacea (n=15) and acne (n=11) were treated with dual-frequency ultrasound, impulse mode, once a week for 4 weeks over both cheeks. Clinician's erythema assessment (CEA) and subject satisfaction questionnaire (SSQ) were performed, and transepidermal water loss (TEWL) and skin color change were calculated at each visit (baseline and weeks 2, 4, and 6).²⁴ At week 6, the 4 parameters were significantly improved. TEWL decreased by 5.37 ± 13.22 g·h⁻¹·m⁻² ($P=.020$). The erythema index decreased by 39.73 ± 44.21 ($P=.010$). At the last follow-up, the CEA ($P<.001$) and SSQ scores ($P=.003$) had also significantly improved. No serious adverse events were identified during treatment or follow-up.²⁴

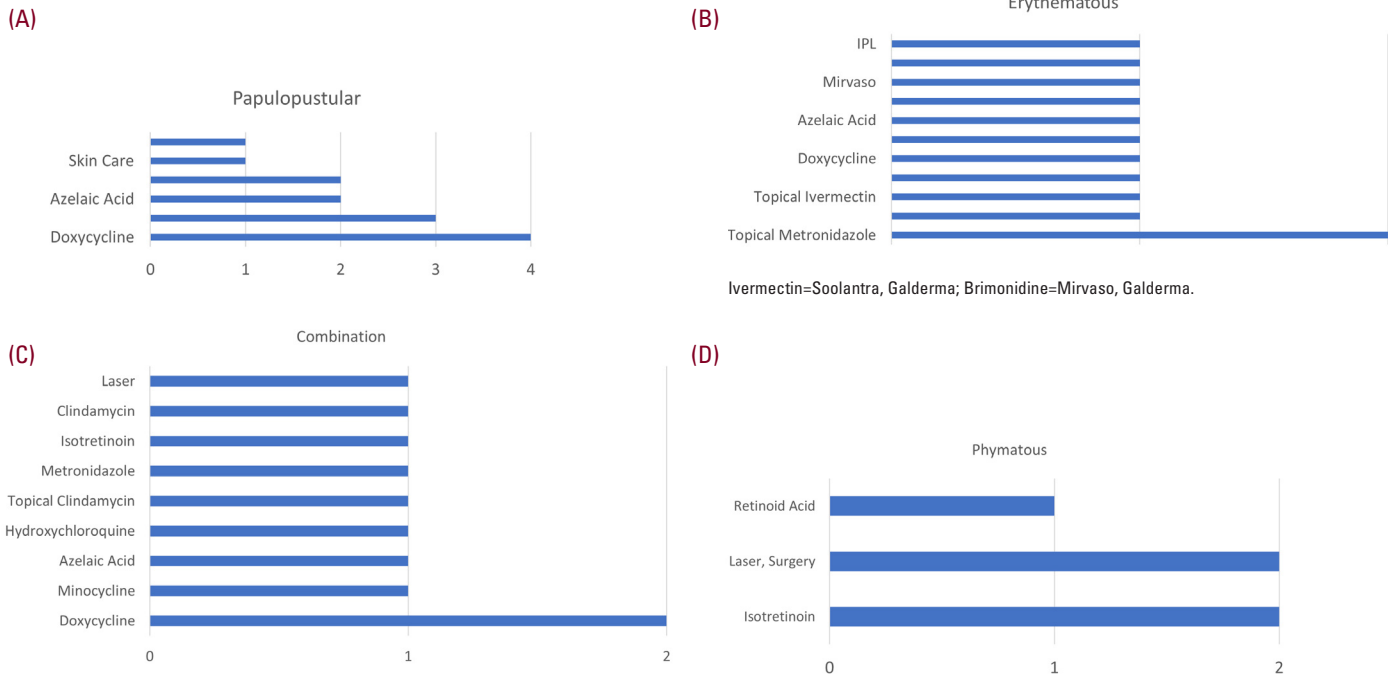
Statement 4: *Addressing barrier dysfunction by using cleanser and moisturizer formulations that restore skin hydration, skin lipids, and physiological stratum corneum pH can improve rosacea signs and symptoms and reduce the likelihood of skin irritation.*

Rosacea is associated with skin barrier dysfunction, and studies have focused both on better understanding the physiology behind the dysfunction as well as ways to improve it. In a study to better understand the reasons for the barrier dysfunction, researchers analyzed human skin samples from patients with rosacea and controls with healthy skin using quantitative polymerase chain reaction and immunohistochemistry.²⁵ A goal of the study was to measure claudin mRNA in lesional skin since claudins form part of tight junctions.²⁵ The researchers found that patients with rosacea had lower levels of claudin mRNA in lesional skin, especially patients with ETR and PPR, and concluded these findings suggest patients with rosacea have impaired skin barrier.²⁵

Another study focused on relieving rosacea symptoms through moisturizers. This study included ceramides – lipids found in the stratum corneum that help with epidermal differentiation, cell adhesion, the skin's barrier function, and apoptosis.^{17,26} This randomized, split-leg, investigator-blinded study of females with dry, itchy skin evaluated the impact of a multilamellar vesicular emulsion, ceramide-containing moisturizing cream on skin hydration, visible signs of dry skin, and discomfort. The study also assessed changes in ceramide, cholesterol, and free fatty acid levels in the stratum corneum after applying the cream.²⁷ After 3 days, the skin's water content was significantly greater (30.6% increase, $P<.001$) in the treatment group than in the control group. Immediately after application, subjects reported significantly improved itching ($P<.001$), stinging ($P<.008$), and burning ($P=.001$). Skin dryness, roughness, desquamation, luminosity, erythema, and overall appearance were also statistically improved immediately, at day 3, and at week 4 ($P<.001$).²⁷ In the treated leg, total skin ceramide content increased by 10% after 4 weeks of moisturizer and lasted for 24 hours after discontinuation.

A separate study supports the importance of moisturizers in patients with rosacea. In this 7-day multicenter open-label study in patients (n=102) with mild to moderate PPR, patients were treated with azelaic acid gel 15% twice a day, as well as a specific cleanser and moisturizer. The moisturizer was applied only on the right half of the face.¹⁸ The study evaluated this regimen's impact on the severity and duration of burning, itching, stinging, and tingling and whether regular moisturizer application relieved symptoms.¹⁸ Both moisturizers used at random in the study contain ceramides.^{28,29} A cumulative symptom score (CSS) was calculated by averaging the separate scores for burning, itching, stinging, and tingling at every point of measurement.¹⁸ The mean CSS at end of the study was lower for the side (right) ($P=.008$) of the face where moisturizer was applied compared with baseline as well as compared with the side without moisturizer (left) ($P=.015$).¹⁸

Another study evaluated a ceramide-containing cream vs a cream without ceramides. Barrier restoring moisturizers can reduce skin irritation and promote a healthy skin barrier. A double-blind, intra-subject control, split body study with 34 subjects 20 to 89 years old with eczema-prone skin.³⁰ The test ceramides containing cream (CER cream)²⁸ or reference cream (a sodium lauryl sulfate-free paraffin-based emollient prescribed by the National Health Service in the United Kingdom) were randomly assigned to one volar forearm and lower leg, and subjects were treated twice a day for 4 weeks.³⁰ Using Fourier-transform infrared (FTIR) spectroscopy, the researchers found that after 28 days of treatment, the ceramide-containing cream increased lipids deep within the stratum corneum.³⁰

FIGURE 4. Pre-meeting survey (N = 4): What do you use to treat each type of rosacea? (A) Papulopustular rosacea; (B) Erythematous rosacea; (C) Combination rosacea; (D) Phymatous rosacea.

Additional tests also found that skin treated with CER cream, compared with skin treated with the reference cream, had superior resilience to tape-stripping damage.³¹ After tape-stripping, TEWL was lower for the CER cream treated skin than the reference treated skin.³¹ Skin barrier integrity, as measured by the area under the TEWL curve, was also greater for the CER cream- than the reference-treated skin.³¹

The study also included an irritant challenge where sodium lauryl sulfate patches were applied on day 29, removed on day 30, and reactions measured on day 31. The areas treated with CER cream had a significantly ($P<.0001$) smaller change in the visual redness score than the areas treated with the reference cream and a significantly ($P<.0001$) lower change in TEWL. These results suggest that compared with a paraffin-based emollient, CER cream protects better against irritants.^{30, 32}

Results from the Survey

The percentages of each rosacea subtype the panel reported seeing were: mostly-erythematous (40%-65%), mostly-papulopustular (20%-45%), mostly-phymatous (2%-10%), and a combination (0%- 21%). For treatment choices (N=4 panel), doxycycline was the most frequently identified treatment for both papulopustular and combination rosacea, topical metronidazole was the most frequently identified for erythematous rosacea, and laser, surgery, and isotretinoin were the most frequently identified treatments for phymatous rosacea (Figure 4). These treatments are in line with published recommendations.³⁵

The panel was asked to list their first, second, and third choice of non-prescription skincare products for rosacea monotherapy (Table 1), adjunctive therapy (Table 2), and maintenance therapy (Table 3). The panels' first choices are presented in graph format for rosacea monotherapy (Figure 5A), adjunctive therapy (Figure 5B), and maintenance therapy (Figure 5C). For rosacea monotherapy, serum or cream with neurosensine (N=2) was used. For adjunctive therapy, the response was a ceramide-containing moisturizer (N=2), and for maintenance therapy, the response was moisturizers with ceramides (N=3).

Regarding ingredients in non-prescription moisturizers that the panel (N=4) considered the most important for their patients with rosacea (some panels listed multiple ingredients): ceramides were mentioned 4 times, and other ingredients once each (Figure 5D). When asked which ingredients in non-prescription cleansers they considered the most important for their rosacea patients, the panel (N=4) answered: syndets or cleansing lotions, neurosensine, gentle skin cleansing, and gentle with minimal irritancy. When asked which ingredients in non-prescription cleansers should not be used for their rosacea patients, the panel (N=4) answered: lactic acid, glycolic acid, salicylic acid, retinol formulations that contain astringents and abrasives, irritants, or with peeling effects, traditional soaps, and keratolytics. When asked which ingredients in non-prescription moisturizers should not be used in their rosacea patients, the panel answered: lactic acid, glycolic acid, salicylic acid, retinol, heavy ingredients, a high percentage of alpha hydroxy acid,

TABLE 1.

Pre-Meeting Survey First, Second, and Third Choice Non-Prescription Skin Care Products for Rosacea Monotherapy (N = 4)

Product	First Choice	Second Choice	Third Choice
Metronidazole gel	1 ^a	--	--
Serum or cream with neurosensine	2 ^{b,c}	--	--
Ceramide-containing skincare	1 ^d	--	--
Topicals with azelaic acid	--	2 ^{e,f}	--
Topical with licochalcone A and a skin sensory fiber regulator	--	1 ^g	--
Cream with Lactobacillus	--	1 ^h	--
Brimonidine gel	--	--	1 ⁱ
Topical with B5	--	--	1 ^j
Soap-free cleanser	--	--	1 ^k

Robaz, Galderma;^a Toleriane Ultra Light, La Roche-Posay;^b Rosaliac AR Serum, La Roche-Posay;^c CeraVe;^d Skinoren, Leo Laboratories;^e Beautiface;^f AntiREDNESS Soothing Care, Eucerin;^g Redness Solution Daily Relief Cream, Clinique;^h Mirvaso, Galderma;ⁱ Cicaplast Balm B5 for Dry Skin Irritations, LaRoche Posay;^j Ultra Gentle Daily Cleanser, Neutrogena^k

TABLE 2.

Pre-Meeting Survey First, Second, and Third Choice Non-Prescription Skin Care Products for Rosacea Adjunctive Therapy (N = 4)

Product	First Choice	Second Choice	Third Choice
Ceramide-containing moisturizer	1 ^{a,b}	--	--
Moisturizer with neurosensine	1 ^c	--	1 ^c
Topicals with B3 and B5	1 ^d	--	--
Oil-free moisturizer with glycerin and dimethicone	--	1 ^e	--
Cream with licochalcone A	--	1 ^f	1 ^g
Moisturizer with phemeranthus and avocado	--	1 ^h	--
Cream for dry, sensitive skin	--	1 ⁱ	--
Topical with sansool and azelaic acid	--	--	1 ^j

Moisturizing Cream, CeraVe;^a Toleriane Double Repair Facial Moisturizer With SPF, La Roche-Posay;^b Toleriane Ultra Moisturizing Cream, La Roche-Posay;^c panelist specified La Roche-Posay products;^d Oil-Free Face Moisturizer for Sensitive Skin, Neutrogena;^e AntiREDNESS Soothing Care, Eucerin;^f Redness Relief Night Crème, Eucerin;^g Winona topical;^h Intensive Moisture Facial Cream, Curél;ⁱ Beautiface^j

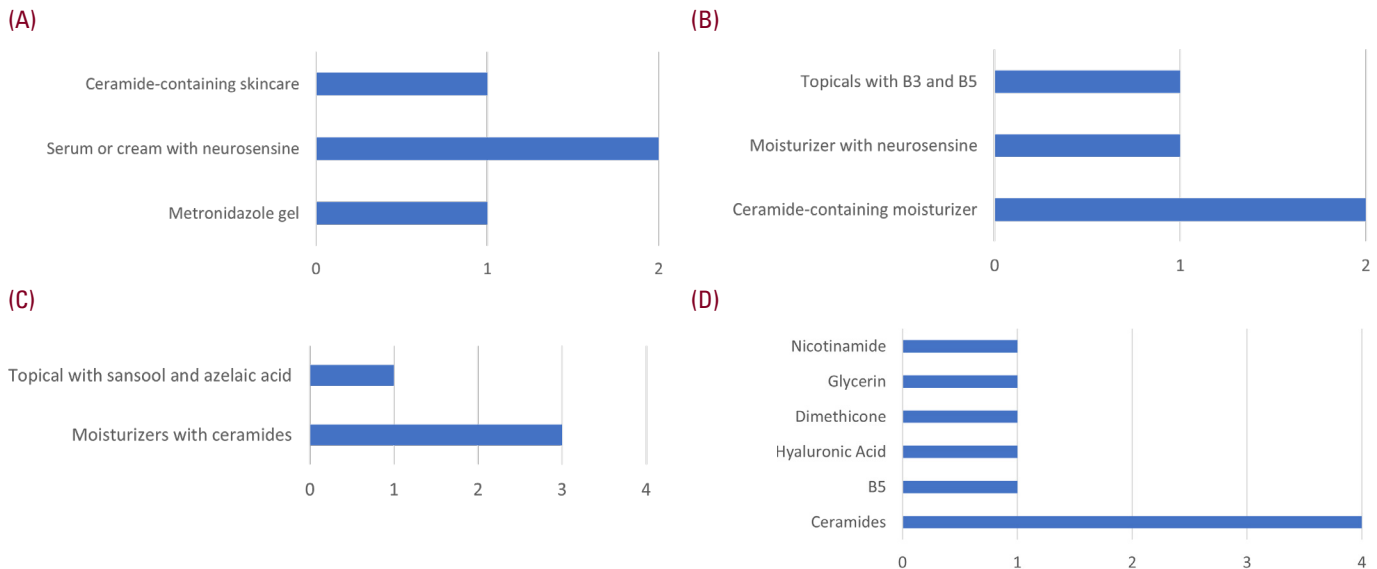
TABLE 3.

Pre-Meeting Survey First, Second, and Third Choice Non-Prescription Skin Care Products for Rosacea Maintenance Therapy (N = 4)

Product	First Choice	Second Choice	Third Choice
Moisturizers with ceramides	3 ^{a,b}	--	1 ^h
Topical with sansool and azelaic acid	1 ^c	--	--
Lotion with sunscreen and licochalcone	--	1 ^d	--
Topicals with B3 and B5	--	1 ^e	--
Oil-free moisturizer with glycerin and dimethicone	--	1 ^f	--
Night cream with herbs	--	--	1 ^g
Cream with peptide complex	--	--	1 ⁱ
Topical with sansool and azelaic acid	--	--	1 ^j

PM Facial Moisturizing Lotion, CeraVe;^a Daily Moisturizing Lotion, CeraVe;^b Beautiface;^c Redness Relief Day Lotion Broad Spectrum SPF 15, Eucerin;^d panelist specified La Roche-Posay products;^e Oil-Free Face Moisturizer for Sensitive Skin, Neutrogena;^f Night Cream, Rosacea Care;^g panelist generalized a CeraVe product with ceramides;^h Redness Neutralizer, SkinCeuticalsⁱ

FIGURE 5. Pre-meeting survey (N = 4) Choice of non-prescription skincare: (A) First-choice non-prescription skincare product for rosacea monotherapy; (B) First-choice non-prescription skincare product for adjunctive rosacea therapy; (C) First-choice non-prescription skincare product for rosacea maintenance therapy; (D) What ingredients in non-prescription moisturizers do you consider to be the most important for your rosacea patients?



fragrances, and PABA. When asked whether there are any other situations in which they would use non-prescription skin care for rosacea therapy, the panel answered: adjunctive therapy after laser treatment of rosacea; before and after intense pulsed light, CO₂ laser, chemical peel; maintenance phase; very sensitive skin with easy flushing. Regarding the first through third sunscreen preferences, the panel gave a variety of answers.

Statement 5. Educate Asian rosacea patients on the importance of:

- Avoidance of triggers³³
- Using gentle cleansers³³
- Avoiding skincare products that are irritating and have an elevated pH⁶
- Avoiding excessive cleansing and exfoliating⁶
- Frequent use of quality moisturizers³³
- Choosing skincare that can reestablish a healthy barrier⁶
- Using sun protection with SPF ≥ 30 and additional UVA protection³³

The skin of patients with rosacea is characterized by severe dryness, increased pH, loss of water through the epidermis, and decreased hydration.³⁴ For general skincare, the 2017 ROSacea Consensus (ROSCO) guidelines instruct that the following are essential skincare components: using sunscreen with a sun protection factor of at least 30, applying moisturizer often, using non-prescription cleansers that are gentle, and avoiding

triggers.³³ Baldwin and team also emphasize the importance of using the right skincare products. Statements 1 through 4 and their associated literature support the rationale for, and importance of, the approach outlined in statement 5.

CONCLUSION

Rosacea is an inflammatory disease primarily of the facial skin, which may be underrecognized in Asians. This review covers 5 consensus statements of an expert panel of dermatologists who practice in Asia and the supporting literature. Adjunctive skincare was considered an important part of treatment and maintenance in Asian rosacea patients and prescription treatment. Equally important was the absence of potentially irritating substances due to the highly sensitive skin of these patients.

LIMITATIONS

Head-to-head studies of non-prescription products used in patients with rosacea are scarce. Studies that incorporate biophysical measurements with clinical parameters would improve our understanding of the performance of non-prescription products in patients with rosacea.

DISCLOSURES

The authors disclose receipt of an unrestricted educational grant from CeraVe International for support with the research of this work, and also received consultancy fees for their work on this project.

REFERENCES

- Gallo RL, Granstein RD, Kang S, et al. Standard classification and pathophysiology of rosacea: The 2017 update by the National Rosacea Society Expert Committee. *J Am Acad Dermatol*. 2018;78(1):148-155. doi:10.1016/j.jaad.2017.08.037
- Schaller M, Almeida LMC, Bewley A, et al. Recommendations for rosacea diagnosis, classification and management: update from the global ROSacea COnsensus 2019 panel. *Br J Dermatol*. 2020;182(5):1269-1276. doi:10.1111/bjd.18420
- Woo YR, Lim JH, Cho DH, Park HJ. Rosacea: molecular mechanisms and management of a chronic cutaneous inflammatory condition. *Int J Mol Sci*. 2016;17(9):doi:10.3390/ijms17091562
- van Zuuren EJ, Fedorowicz Z, Tan J, et al. Interventions for rosacea based on the phenotype approach: an updated systematic review including GRADE assessments. *Br J Dermatol*. 2019;181(1):65-79. doi:10.1111/bjd.17590
- Gether L, Overgaard LK, Egeberg A, et al. Incidence and prevalence of rosacea: a systematic review and meta-analysis. *Br J Dermatol*. 2018;179(2):282-289. doi:10.1111/bjd.16481
- Baldwin H, Alexis AF, Andriessen A, et al. Evidence of barrier deficiency in rosacea and the importance of integrating OTC skincare products into treatment regimens. *J Drugs Dermatol*. 2021;20(4):384-392. doi:10.36849/jdd.2021.5861
- Alexis AF, Callender VD, Baldwin HE, et al. Global epidemiology and clinical spectrum of rosacea, highlighting skin of color: Review and clinical practice experience. *J Am Acad Dermatol*. 2019;80(6):1722-1729.e7. doi:10.1016/j.jaad.2018.08.049
- Lee JB, Moon J, Moon KR, et al. Epidemiological and clinical features of rosacea in Korea: a multicenter cross-sectional study. *J Dermatol*. 2018;45(5):546-553. doi:10.1111/1346-8138.14281
- Smith Begolka W, Elston DM, Beutner KR. American Academy of Dermatology evidence-based guideline development process: responding to new challenges and establishing transparency. *J Am Acad Dermatol*. 2011;64(6):e105-12. doi:10.1016/j.jaad.2010.10.029
- Kim NH, Yun SJ, Lee JB. Clinical features of Korean patients with rhinophyma. *J Dermatol*. 2017;44(6):710-712. doi:10.1111/1346-8138.13714
- Farshchian M, Daveluy S. Rosacea. *StatPearls*. StatPearls Publishing; 2022.
- Woo YR, Kim HS, Lee SH, et al. Systemic comorbidities in Korean patients with rosacea: results from a multi-institutional case-control study. *J Clin Med*. 2020;9(10):doi:10.3390/jcm9103336
- Hung CT, Chiang CP, Chung CH, et al. Risk of psychiatric disorders in rosacea: a nationwide, population-based, cohort study in Taiwan. *J Dermatol*. 2019;46(2):110-116. doi:10.1111/1346-8138.14705
- Son JH, Chung BY, Jung MJ, et al. The risk of rosacea according to chronic diseases and medications: a 5-year retrospective, multi-institutional case-control study. *Ann Dermatol*. 2018;30(6):676-687. doi:10.5021/ad.2018.30.6.676
- Tan J, Blume-Peytavi U, Ortonne JP, et al. An observational cross-sectional survey of rosacea: clinical associations and progression between subtypes. *Br J Dermatol*. 2013;169(3):555-62. doi:10.1111/bjd.12385
- Rawlings AV. Ethnic skin types: are there differences in skin structure and function? *Int J Cosmet Sci*. 2006;28(2):79-93. doi:10.1111/j.1467-2494.2006.00302.x
- Muizzuddin N, Hellemans L, Van Overloop L, et al. Structural and functional differences in barrier properties of African American, Caucasian and East Asian skin. *J Dermatol Sci*. 2010;59(2):123-128. doi:10.1016/j.jdermsci.2010.06.003
- Del Rosso JQ. The use of moisturizers as an integral component of topical therapy for rosacea: clinical results based on the Assessment of Skin Characteristics Study. *Cutis*. 2009;84(2):72-76.
- Deng Z, Yan S, Li J, et al. The association between rosacea and the condition of low tolerance to skincare of the facial skin: a case-control study in China. *J Cosmet Dermatol*. 2022;21(3):1171-1177. doi:10.1111/jocd.14178
- Zuo Z, Wang B, Shen M, et al. Skincare habits and rosacea in 3,439 Chinese adolescents: a university-based cross-sectional study. *Acta Derm Venereol*. 2020;100(6):adv00081. doi:10.2340/00015555-3442
- Huang YX, Li J, Zhao ZX, et al. Effects of skin care habits on the development of rosacea: A multicenter retrospective case-control survey in Chinese population. *PLoS One*. 2020;15(4):e0231078. doi:10.1371/journal.pone.0231078
- Li G, Wang B, Zhao Z, et al. Excessive cleansing: an underestimating risk factor of rosacea in Chinese population. *Arch Dermatol Res*. 2021;313(4):225-234. doi:10.1007/s00403-020-02095
- Kim MS, Chang SE, Haw S, Bak H, Kim YJ, Lee MW. Tranexamic acid solution soaking is an excellent approach for rosacea patients: a preliminary observation in 6 patients. *J Dermatol*. 2013;40(1):70-1. doi:10.1111/j.1346-8138.2012.01515.x
- Kim YJ, Moon IJ, Lee HW, et al. The efficacy and safety of dual-frequency ultrasound for improving skin hydration and erythema in patients with rosacea and acne. *J Clin Med*. 2021;10(4):doi:10.3390/jcm10040834
- Deng Z, Chen M, Xie H, et al. Claudin reduction may relate to an impaired skin barrier in rosacea. *J Dermatol*. 2019;46(4):314-321. doi:10.1111/1346-8138.14792
- Choi MJ, Maibach HI. Role of ceramides in barrier function of healthy and diseased skin. *Am J Clin Dermatol*. 2005;6(4):215-23. doi:10.2165/00128071-200506040-00002
- Draeos ZD, Baalbaki NH, Raab S, et al. The effect of a ceramide-containing product on stratum corneum lipid levels in dry legs. *J Drugs Dermatol*. 2020;19(4):372-376. doi:10.36849/jdd.2020.4796
- Moisturizing cream. CeraVe. Updated 2022. Accessed May 12, 2022: <https://www.cerave.com/skincare/moisturizers/moisturizing-cream>
- Moisturizing cream, Cetaphil. Galderma. Updated 2022. Accessed May 12, 2022: <https://www.cetaphil.com/us/moisturizers/moisturizing-cream>
- Danby S, Andrew P, Kay L, et al. An investigation of the skin barrier restoring effects of a cream containing ceramides in a multi-vesicular emulsion in people with dry, eczema-prone, skin: the RESTORE study phase 2. Presented at: The American Academy of Dermatology Annual Meeting; March 20-24, 2020; Denver, CO.
- Danby SG, Andrew PV, Kay LJ, et al. Enhancement of stratum corneum lipid structure improves skin barrier function and protects against irritation in adults with dry, eczema-prone skin. *Br J Dermatol*. 2022;186(5):875-886.
- Danby SG, Andrew PV, Brown K, et al. An investigation of the skin barrier restoring effects of a cream and lotion containing ceramides in a multi-vesicular emulsion in people with dry, eczema-prone, skin: the RESTORE study phase 1. *Dermatol Ther (Heidelb)*. 2020;10(5):1031-1041. doi:10.1007/s13555-020-00426-3
- Schaller M, Almeida LM, Bewley A, et al. Rosacea treatment update: recommendations from the global ROSacea COnsensus (ROSCO) panel. *Br J Dermatol*. 2017;176(2):465-471. doi:10.1111/bjd.15173
- Medgyesi B, Dajnoki Z, Béke G, et al. Rosacea is characterized by a profoundly diminished skin barrier. *J Invest Dermatol*. 2020;140(10):1938-1950.e5. doi:10.1016/j.jid.2020.02.025
- Del Rosso JQ, Tangheiti E, Webster G, et al. Update on the management of rosacea from the American Acne & Rosacea Society (AARS). *J Clin Aesthet Dermatol*. 2020;13(6 Suppl):S17-s24.

AUTHOR CORRESPONDENCE

Anneke Andriessen PhD

E-mail:..... anneke.a@tiscali.nl