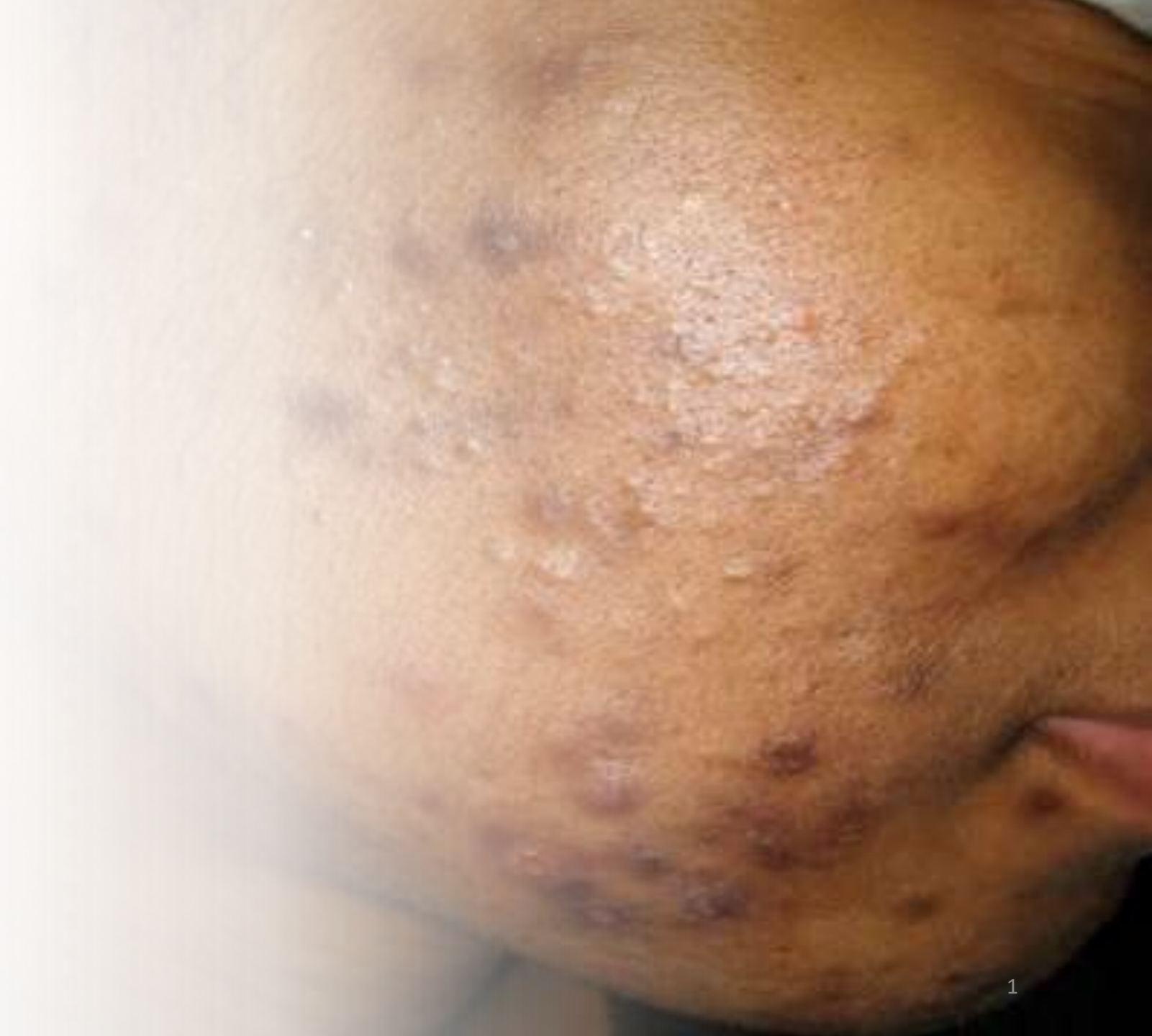


Racial/ethnic variations in acne: Implications for treatment and skin care recommendations for acne patients with skin of color

Speaker deck



Objectives

1

Understand

- Better understand the differences in acne when comparing different ethnicities

2

Discuss

- Discuss the challenges in treating acne in the skin of color patient

3

Review

- Review the therapeutic options in treating acne in skin of color

4

Discuss

- Discuss the role of moisturizers & cleansers in treating acne in skin of color

5

Explore

- Explore moisturizer & cleanser ingredients offering insights into the specific role of common key ingredients in moisturizer formulations



Racial/ethnic variations in acne: Implications for treatment and skin care recommendations for acne patients with skin of color

Andrew F. Alexis¹, Heather Woolery-Lloyd², Kiyanna Williams³, Anneke Andriessen⁴, Valerie D Callender⁵, Sewon Kang⁶, David Rodriquez⁷, Jerry Tan⁸

ABSTRACT

Background: Global acne prevalence is estimated at 9.4% affecting 650 million adolescents and adults. Acne vulgaris is also among the most common diagnoses observed in skin of color (SOC) populations.

Methods: Six SOC dermatologists from the US and Canada convened for a virtual meeting and used a modified Delphi process to address:

- 1) Are there racial/ethnic differences in the clinical presentation and sequela of acne?
- 2) Are there racial/ethnic differences in the therapeutic endpoint of acne treatment and patient expectations?
- 3) Is there a need for specialized approaches to therapeutic options and skincare in acne patients with SOC?

The results of a literature review and the outcome of discussions, coupled with the panel's expert opinion and experience, is shown in the current review which is intended for health care providers caring for acne patients and clinician researchers.

Results: Racial/ethnic differences in the clinical presentation, sequelae, and desired treatment outcomes for acne have been reported.

Notwithstanding limitations in the number, size, and methodologies of studies to date, the available data suggest that strategies to improve outcomes in acne patients with SOC include: Early initiation and maintenance of treatment regimens and careful consideration of tolerability of active ingredients, vehicles and dosing. Using pH balanced, non-irritating cleansers and non-comedogenic moisturizers to minimize irritation or dryness.

Conclusions: there a need for specialized approaches to therapeutic options and skincare in acne patients with SOC. OTC skincare these products are recommended before and during prescription therapy and as part of a maintenance regimen.

Methods

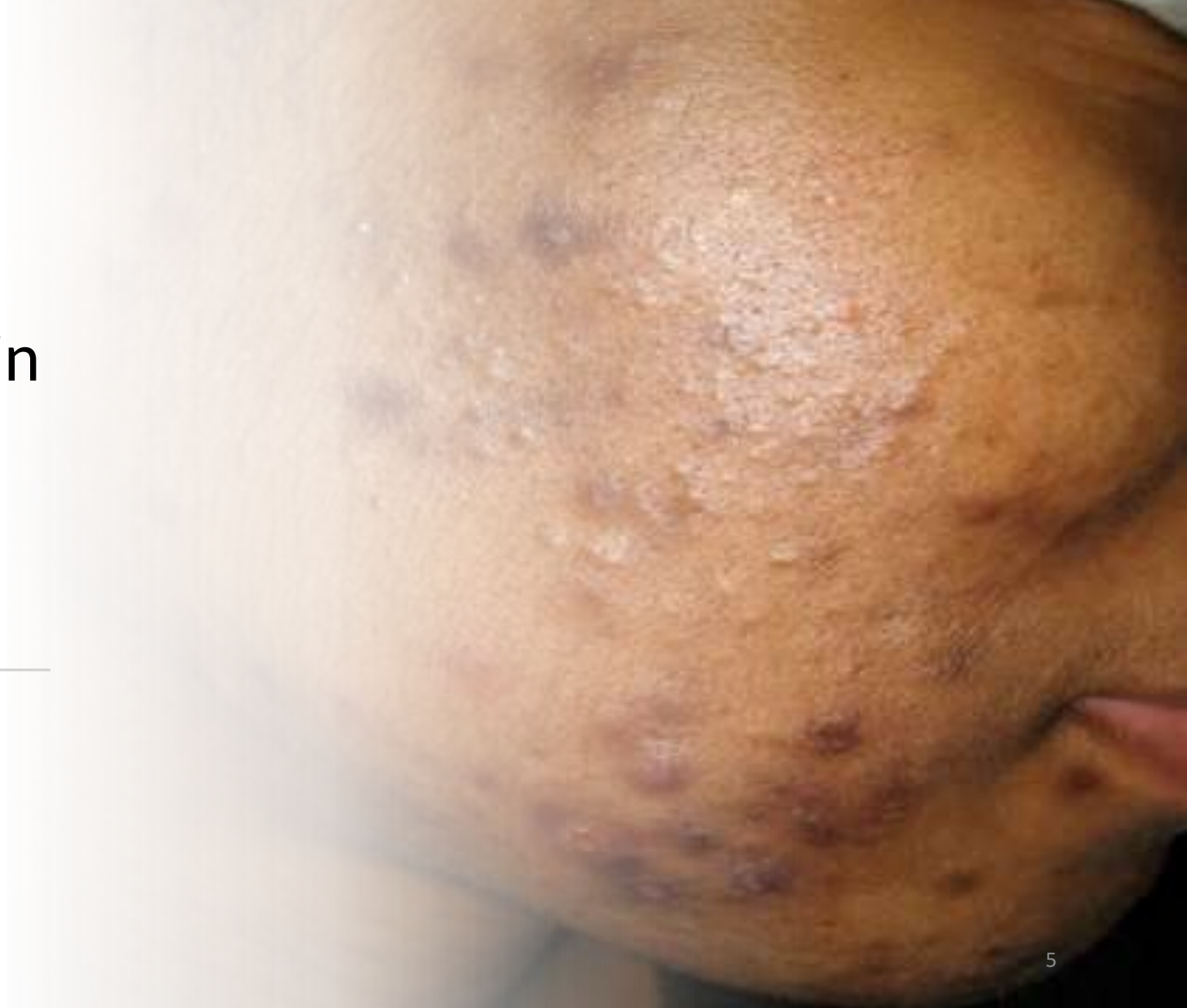
- Six SOC dermatologists used a Modified Delphy process to address¹⁻³
 1. Are there racial/ethnic differences in the clinical presentation and sequela of acne?
 2. Are there racial/ethnic differences in the therapeutic endpoint of acne treatment and patient expectations?
 3. Is there a need for specialized approaches to therapeutic options and skincare in acne patients with SOC?
- The panel developed six consensus statements after review and discussion of drafted statements generated by the original literature search.
- The statements are intended for health care providers caring for acne patients and clinician-researchers and were developed based on the panel's available literature and expert opinion.

1. Alexis AF, Woolery-Lloyd H, et al. *J Drugs Dermatol*. 2021; submitted 10 April 21

2. Trevelyan EG et al. *Eur J Integrative Med* 2015;7(4):423-428.

3. Brouwers M et al. *Can Med Association J* 2010;182:E839-42

Are there racial/
ethnic differences in
the clinical
presentation and
sequela of acne?

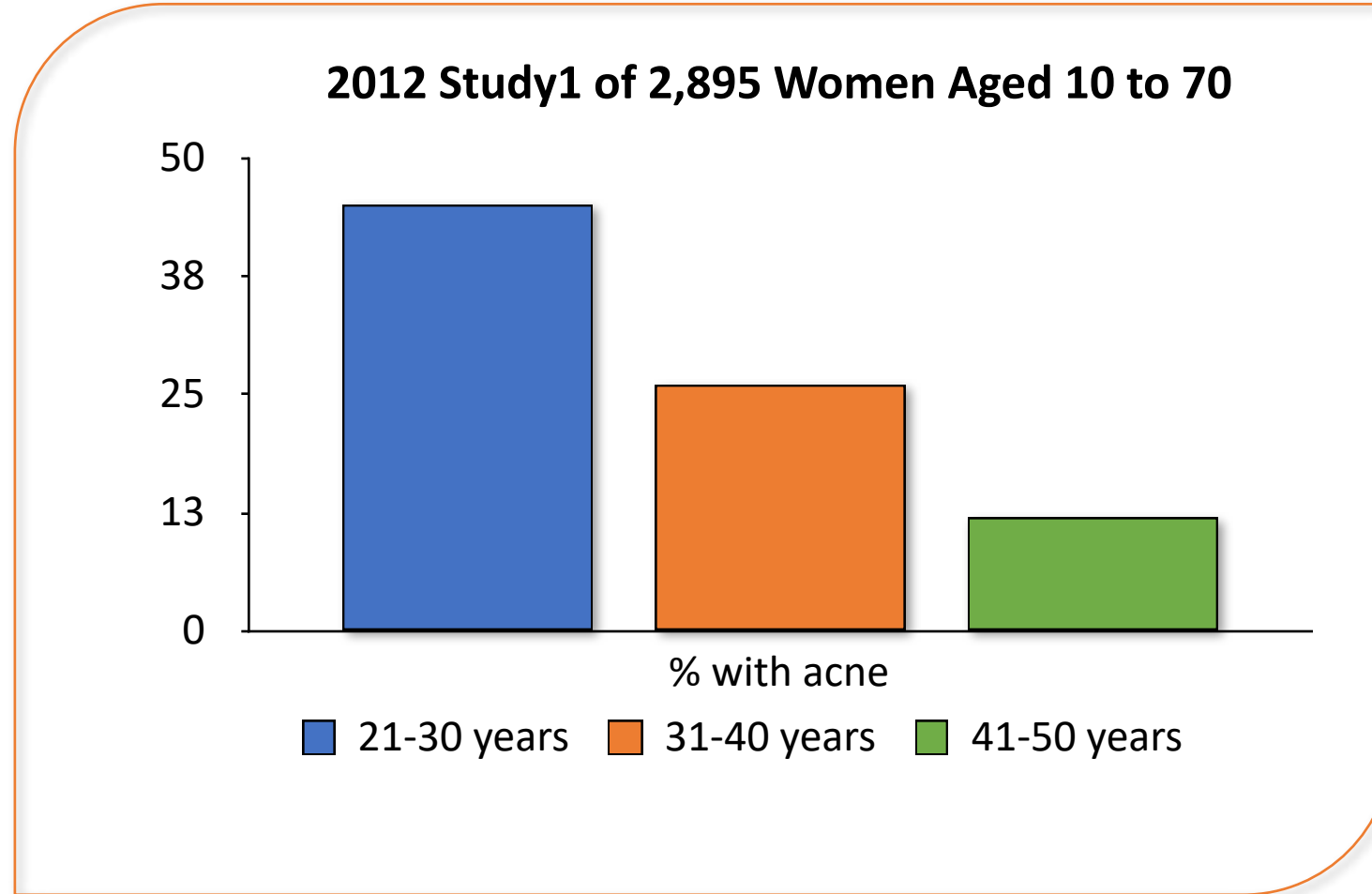


Acne is the most common dermatological disorder

- Acne prevalence (2010)¹ 9%
 - 8th most prevalent disease
- Global acne prevalence
 - At 9.4% affecting 650 M adolescents and adults¹⁻⁴
- Moderate to severe acne affects
 - About 20% of young individuals
 - Correlation between pubertal maturity and severity²
- Acne affects a substantial number of adults
 - Particularly women⁴



Acne: in Women



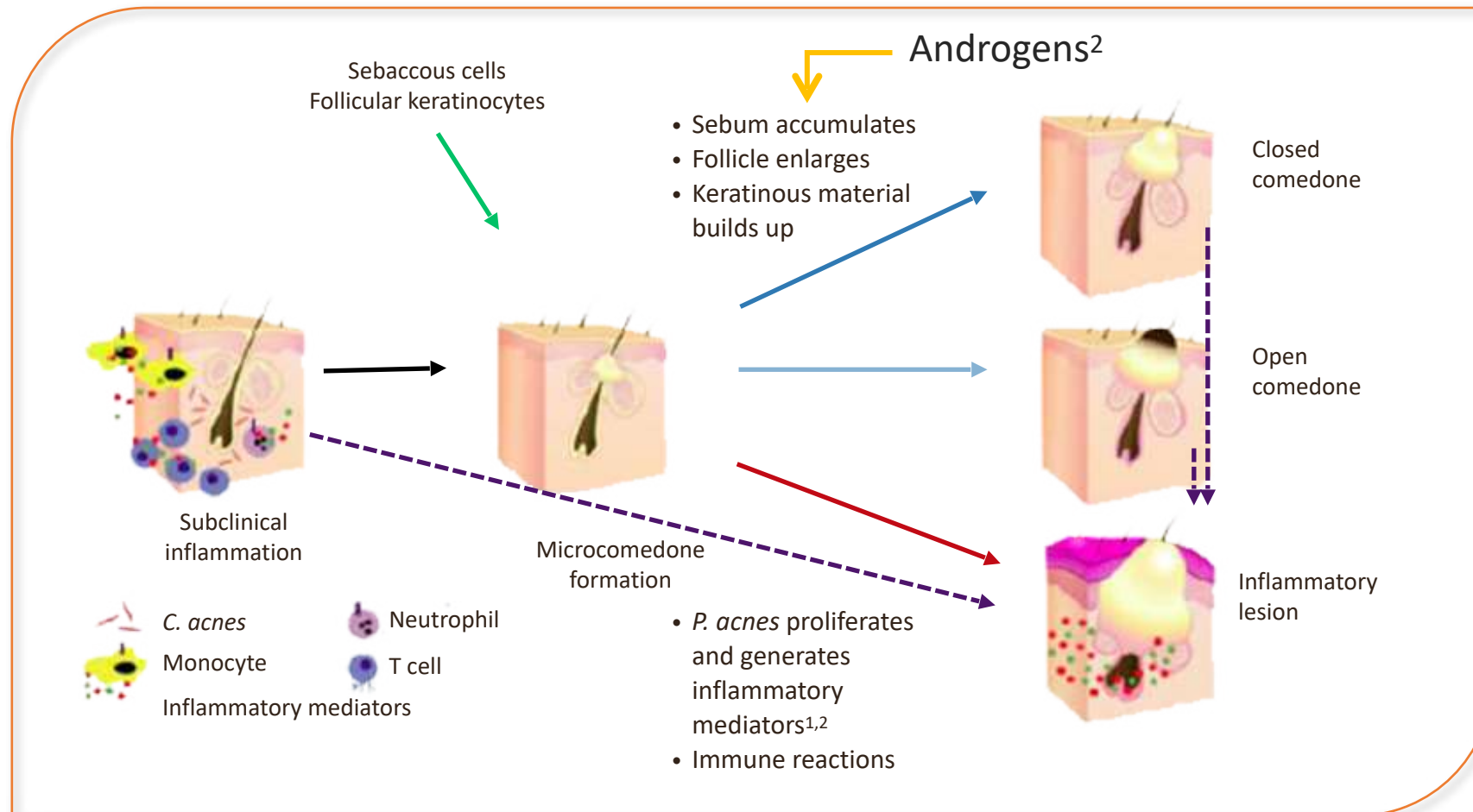
More inflammation in adult acne

- Compared to adolescent acne, adult acne tends to be more inflammatory¹⁻³
 - Involvement of the cheeks and lower half of the face
 - Comedones are uncommon



1.Perkins AC et al. J Womens Health (Larchmt) 2012;21:223–30,
2.Dreno B et al. J European Acad Dermatol Venereol 2013;27:1063–70,
3.Khunger N, et al. Indian J Dermatol Venereol Leprol 2012;78:335–41.

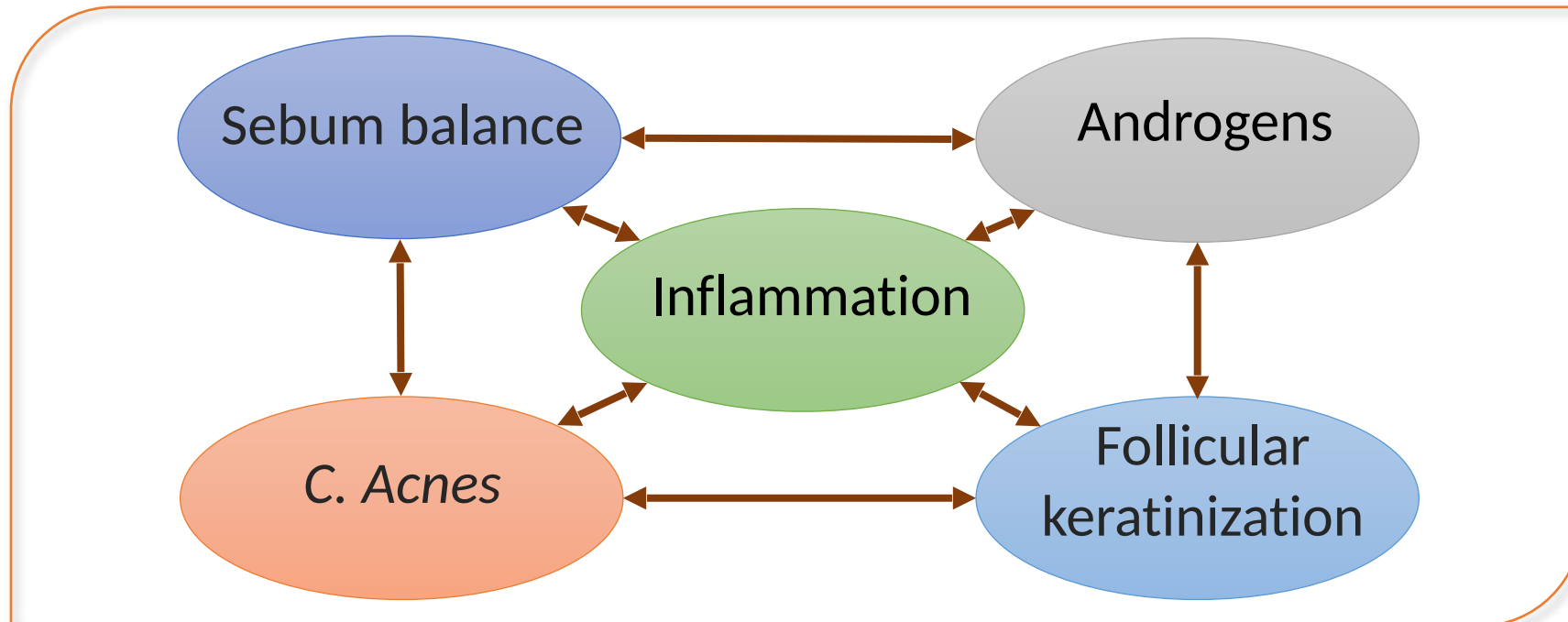
Concepts on the pathogenesis of acne



Pathogenic Factors in Inflammatory Acne



- Altered follicular growth and differentiation
- Proliferation of *C. acnes*
- Sebum overproduction and ductal blockage
- Inflammation



Acne can have significant social, psychological, and physical consequences

Associated with lower self-esteem, anxiety, depression¹⁻³

May produce negative emotions: embarrassment, humiliation, self-consciousness¹⁻³

Socioeconomic impact, perceptions of others (e.g., increased unemployment rates in those with severe acne)^{1,2}

Can lead to acne scars, which can further affect quality of life^{1,4}



Acne occurs in all skin phototypes

Skin phototype or the “Fitzpatrick scale” is a method of categorization of skin type
There are six different types categorized from, fair skin tone (Type I) to dark skin tone (Type VI)



Skin type	Features	Tanning
Type I	Pale white skin, blue/green eyes, blond/red hair	Always burns, does not tan
Type II	Fair skin, blue eyes	Burns easily, tans poorly
Type III	Darker white skin	Tans after initial burn
Type IV	Light brown skin	May burn, tans easily
Type V	Brown skin	Rarely burns, tans darkly easily
Type VI	Dark brown or black skin	Never burns, always tans darkly

U.S. National Ambulatory Medical Care Survey (1993-2009) SOC

African American	Asian/Pacific Island.	Hispanic/Latino
1. Acne	1. Acne	1. Acne
2. Dermatitis, unspec	2. Dermatitis, unspec	2. Dermatitis, unspec
3. Seb. dermatitis	3. Benign neoplasm	3. Psoriasis
4. Atopic Dermatitis	4. Psoriasis	4. Benign neoplasm
5. Dyschromia	5. Seb. keratosis	5. Viral warts
6. Psoriasis	6. Atopic dermatitis	6. Actinic keratosis
7. Alopecia	7. Viral warts	7. Seb. Keratosis
8. Keloid scar	8. Urticaria	8. Sebaceous cyst
9. Viral warts	9. Sebaceous cyst	9. Rosacea
10. Sebaceous cyst	10. Seb. dermatitis	10. Dyschromia

Acne Vulgaris:

Diverse skin types

- Perkins et al. – International sample of 2895 women (384 African American, 520 Asian, 1295 Caucasian, 258 Hispanic and 438 Continental Indian) from 10 to 70 years of age
- Prevalence of acne in different ethnic groups
 - African Americans – 37%
 - Hispanics– 32%
 - Asians – 30%
 - Caucasians – 24%
 - Continental Indians – 23%



Acne Vulgaris: SOC patients

- In the US, acne is the most commonly diagnosed condition in African-American, Asian and Hispanic patients visiting a dermatologist.¹
- PIH due to acne has been reported to occur in almost two-thirds of Black/African American women.²
- Halder and colleagues found that subclinical **inflammation** was present in **clinically noninflammatory** lesions [comedones], and the degree of histopathologic **inflammation** in Black patients with acne was **out of proportion** to their clinical appearance.³
- The researchers suggested that it may explain why PIH and scarring are more common in darker-skinned persons.³

1. Davis SA et al. *J Drugs Dermatol* 2012;11(4):466.

2. Perkins AC et al. *J Eur Acad Dermatol Venereol* 2011;25:1054-60.

3. Falder Rebat M et al. *Expert Rev Dermatol.* 2012;7(2):109-112

Skin of color (SOC)

Post inflammatory hyperpigmentation (PIH)

Racial differences in acne

Web-based cross-sectional survey of 208 women with facial acne between ages 25 and 45 years investigating clinical characteristics, perceptions, and psychosocial impact of facial adult female acne

[ORIGINAL RESEARCH]

Racial Differences in Clinical Characteristics, Perceptions and Behaviors, and Psychosocial Impact of Adult Female Acne

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^eHealth Outcomes Consultant, Laguna Beach, California; ^fSociety Hill Dermatology, Philadelphia, Pennsylvania

Racial differences in acne

- Web-based cross-sectional survey of 208 women with facial acne between ages 25 and 45 years
- Investigating clinical characteristics, perceptions, and psychosocial impact of facial adult female acne

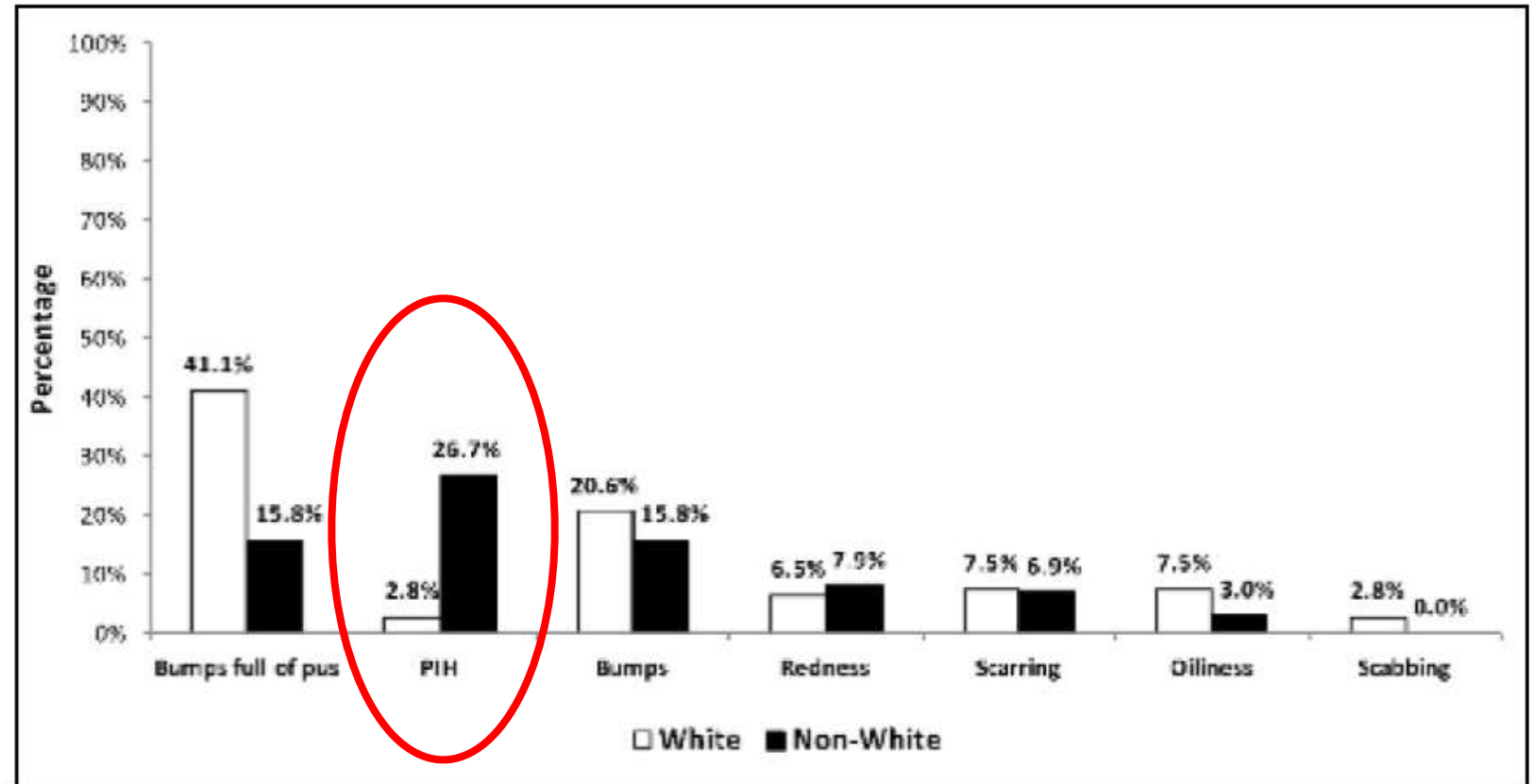


Figure 3. Most troublesome acne signs by race. Note: N=172; percentage of females by race who assigned a ranking of 1 (most troublesome) for each acne sign.

Racial differences in acne, cont

Web-based cross-sectional survey of 208 women with facial acne between ages 25 and 45 years investigating clinical characteristics, perceptions, and psychosocial impact of facial adult female acne

Lesion clearance was most important to White/Caucasian women (57.9 vs. non-White/Caucasian 31.7%, $p < 0.001$)

Of non-White females 41.6% reported PIH clearance to be most important (vs. 8.4% of Caucasians, $p < 0.0001$)



Acne in Skin of Color – Special Considerations



Differences in clinical presentation and impact

Sequelae from acne as well as iatrogenic complications

Differences in therapeutic endpoint

Cultural variations in skin care



Statement 1:

- PIH is a common sequela of acne in SOC but can also occur due to irritation from topical acne treatments or procedural therapies.
 - Given that PIH can occur as a sequela of acne or as a complication of treatment, regimens must be aggressive enough to reduce inflammation from acne and well-tolerated to avoid irritation from treatment.
 - An individualized selection of a topical regimen to minimize irritation should consider tolerability characteristics of the active ingredients and vehicle.
-

Acne presentations in SOC patients

1. Perkins AC et al. *J Eur Acad Dermatol Venereol* 2011;25:1054-60.
2. Davis SA et al. *J Drugs Dermatol* 2012;11(4):466-73.
3. Callender VD, et al. *J Clin Aesthet Dermatol* 2014;7(7):19-31.
4. Davis EC et al. *J Clin Aesthetic Dermatol*. 2010;4:24–38.
5. Hayashi N et al. *J Dermatol* 2015;42:690– 696.
6. Abad-Casintahan F et al. *J Dermatol* 2016;43(7):826– 828.
7. Morrone A et al. *J Dermatol*. 2011;38:405–408.



Type of study

Epidemiology of acne in whites, Asian, Continental Indian and African American women¹

Analysis of nationally representative data²

Review of ethnic differences in clinical presentation, perceptions, behaviors and psychological impact of acne in women³

Review of acne in ethnic skin⁴

PIH prevalence and impact on QoL in Japanese acne patients⁵

Preliminary study on frequency and characteristics of acne-related PIH⁶

Observational study of clinical features of acne in 444 patients with ethnic skin⁷

Key finding

Acne is the **leading diagnosis** in all non-white populations included and **sequelae** are **more common** in SOC

Acne **prevalence** is **greater in SOC** populations than white populations

PIH was **significantly more frequent** ($p < 0.0001$) in women with SOC compared to white females.

PIH is more common in SOC, worsens with persistent and recurring inflammation. Keloidal scars are often associated with greater acne severity.

Of Japanese patients with acne **90.8%** had some degree of **acne-related PIH**.

58.2% of 342 acne patient visiting a dermatologist in seven **Asian** countries had **PIH**

PIH often associated with greater acne severity and frequently present along the jawline and trunk.





Post-inflammatory hyperpigmentation in SOC acne patients

- There is a perception that Asian subgroups are more susceptible to skin irritation from topical treatment, cleansers, and skincare and have a high predisposition to sequelae such as PIH.
- A study reported that 90.8% of Japanese patients with acne had some acne scarring degree¹
- Another study reported that 58.2% of 342 acne patients visiting a dermatologist in seven Asian countries had PIH²
- Both PIH and scars are concerning to Asian patients and can significantly impact the quality of life²
- Prolonged and recurring inflammation can worsen PIH and lead to hypertrophic and keloidal scarring, all of which have a higher prevalence in SOC³
- PIH is often associated with greater acne severity and frequently presents at the jawline and trunk³

Post-inflammatory hyperpigmentation (PIH); Skin of color (SOC)

1. Hayashi N et al. *J Dermatol* 2015;42:690– 696., 2. Abad-Casintahan F et al. *J Dermatol* 2016;43(7):826– 828. 3. Morrone A et al. *J Dermatol.* 2011;38:405–408.

Acne Treatment Algorithm

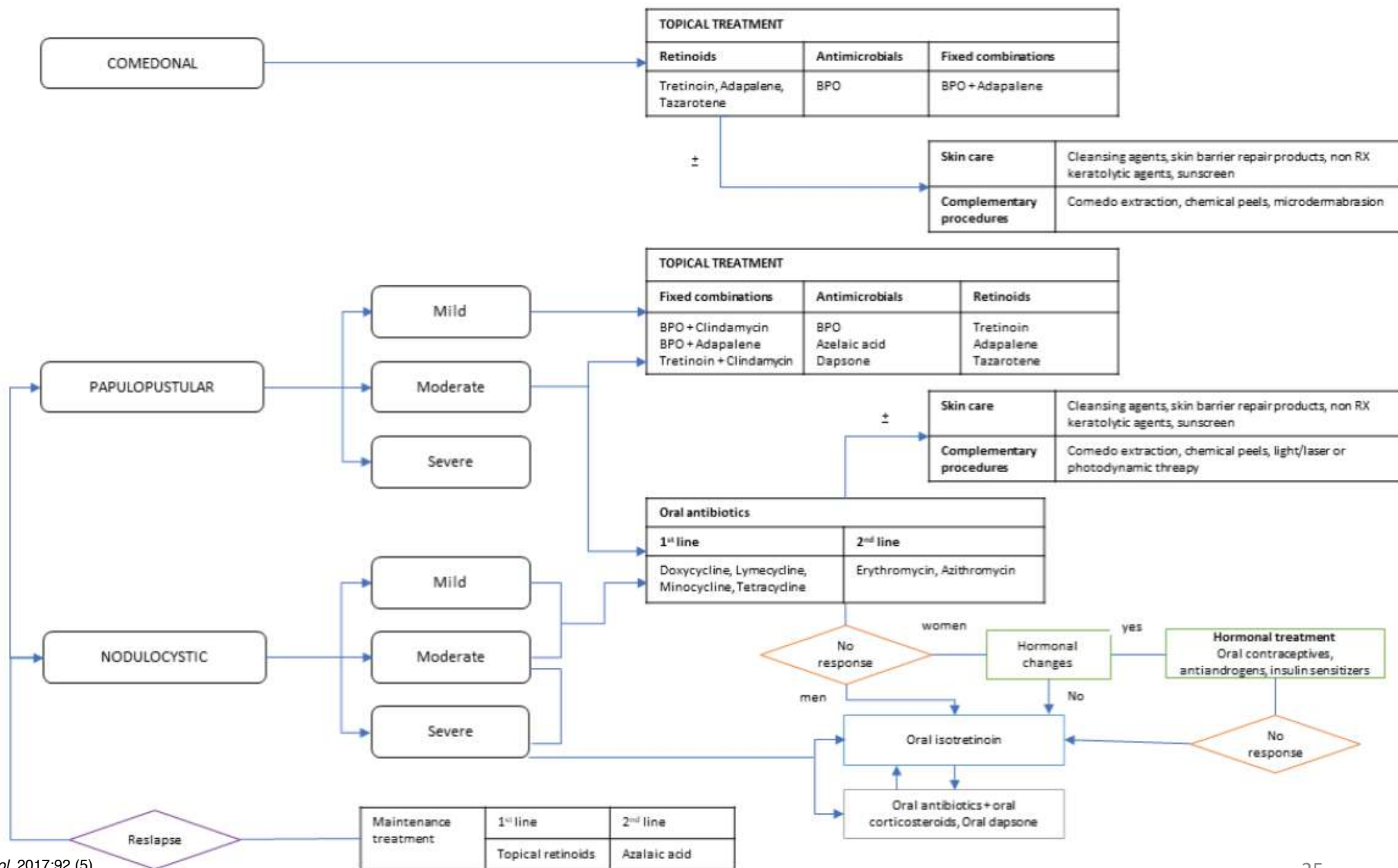
Acne Severity	<div> <div>Mild</div> <div>Moderate</div> <div>Severe</div> </div>				
					
	Comedonal	Mixed and papular/pustular	Mixed and papular/pustular	Nodular	Nodular/conglobate
1 st Choice	Topical retinoid	Topical retinoid + topical antimicrobial	Oral antibiotic + topical retinoid ± topical BPO	Oral antibiotic + topical retinoid + topical BPO	Oral isotretinoin
Alternative(s)	Alt. topical retinoid or azelaic acid or salicylic acid	Alt. topical retinoid or topical antimicrobial or alt. topical retinoid + topical antimicrobial or azelaic acid	Alt. oral antibiotic + alt. topical retinoid ± alt. topical BPO	Oral isotretinoin or alt. oral antibiotic + topical retinoid ± topical BPO/azelaic acid	High-dose oral antibiotic + topical retinoid + topical BPO
Alternative(s) for females	See 1 st choice	See 1 st choice	Oral antiandrogen + topical retinoid/azelaic acid ± topical antimicrobial	Oral antiandrogen + topical retinoid ± oral antibiotic ± topical antimicrobial	High-dose oral antiandrogen + topical retinoid ± topical antimicrobial
Maintenance therapy	Topical retinoid		Topical retinoid ± BPO		

Alternative (Alt); Benzoyl peroxide (BPO)
Thiboutot D, et al. *J Am Acad Dermatol*. 2009;60(5):S1-S50.

Primary Mechanisms of Action

	Therapy	Normalize hyperkeratinization + abnormal desquamation	↓ Bacteria	↓ Inflammation	↓ Sebum	↓ Androgen
TOPICAL	Retinoids	✓		✓		
	BPO	✓	✓			
	Antibiotics		✓	✓		
	Salicylic acid	✓				
ORAL	Antibiotics		✓	✓		
	Hormonal				✓	
	Isotretinoin	✓	✓	✓	✓	

Ibero-Latin American acne treatment algorithm integrates skincare



Adapted from Bagatin et al. *An. Bras. Dermatol.* 2017;92 (5)

1-10. Andriessen A et al. *J Drugs Dermatol.*

2021;20(3):244-250.

Research article (RAC) - antibiotics (AR)

Acne treatment in SOC patients: choosing the correct formulation

- Choosing the appropriate active agent, concentration, vehicle, dosing regimen, and adjunctive skincare can help to maximize benefit while minimizing skin irritation¹
- Various topical treatments are safe and effective in acne patients with Fitzpatrick skin type IV-VI
 - BPO 2.5-5.5%
 - Retinoids
 - Dapsone
 - Azelaic acid
 - Fixed combination products such as clindamycin-BPO, clindamycin-tretinoin, and adapalene-BPO



Statement 2:

- *Dry skin is a common concern among patients with SOC and may be more visible or stigmatizing in richly pigmented skin.*

Dry skin in SOC acne patients

- Dry skin in acne patients may occur due to treatment such as topical retinoids, alpha and beta hydroxy acids, BPO, skincare products, procedures, or lightening creams.
- Skin dryness and irritation are particularly problematic in SOC as it appears as an ashy discoloration and can increase the risk for PIH, respectively.¹
- When using topical therapies in SOC patients, irritation (e.g., retinoid dermatitis) can result in pigmentary sequelae.
- More tolerable formulations such as creams, lotions, and aqueous gels with hydrating ingredients may decrease the risk of dry skin and irritation.

Benzoyl peroxide (BPO); Skin of color (SOC); Post-inflammatory hyperpigmentation (PIH)

1. Davis SA et al. J Drugs Dermatol 2012;11(4):466.

Guidelines and algorithms: Skincare consideration

1. Thiboutot DM et al. *J Am Acad Dermatol*. 2018;78(2S1):S1–23.
2. Zaenglein AL et al. *J Am Acad Dermatol*. 2016;74(5):945-73.e33.
3. Asai Y et al. *Can Med Ass J* 2016;188(2):118-126.
4. Nast A et al. *J Eur Acad Dermatol Venereol : JEADV*. 2016;30(8):1261-8.
5. Bagatin E et al. *An. Bras. Dermatol*. 2017;92 (5) 1-10.
6. Hayashi N et al. *J Dermatol* 2018;45(8):898-935.
7. Acne Group China. *Int J Dermatol Venereol* 2019,2(3):129-137.
8. Sinclair W et al. *South African Fam Pract* 2017; 59(1):24-29.

Guideline/consensus/algorithm	Skincare
International consensus on acne management from the global alliance, 2018	Do not distinguish between skin phototypes or ethnic groups ¹
American acne guidelines, 2016	Do not distinguish between skin phototypes or ethnic groups ²
Canadian clinical guideline, 2016	Considering skin type and tolerance and the use of creams and lotions for sensitive skin and use adjunctive skin care for patients that receive treatment causing dry skin or irritation ³
European evidence-based (S3) guideline, 2016	Do not distinguish between skin phototypes or ethnic groups ⁴
Algorithm for acne treatment: Ibero-Latin American consensus, 2017.	The algorithm incorporates skincare and sunscreens as an essential part of acne prevention, treatment, and maintenance and recommends daily use of low-irritant and non-comedogenic cleansers, moisturizers, and sunscreen to reduce adverse events such as dryness, erythema, photosensitivity, and PIH ⁵
Japanese acne guidelines, 2018	Combining evidence-based skincare with topical drugs to reduce skin irritation from the drugs is recommended ⁶
Chinese acne guidelines, 2019	The use of evidence-based skincare with topical drugs is recommended ⁷
South African acne guidelines, 2017	Skincare is not recommended as it may cause acne exacerbation ⁸

Over the Counter Products for Acne Treatment and Maintenance in Latin America: A Review of Current Clinical Practice

Anneke Andriessen PhD,^a Ana Cecilia Rodas Diaz MD,^b Paola Castaneda Gameros MD,^c Olga Macias MD,^d
Juliane Rocio Neves MD,^e Carmen Gloria Gonzalez MD^f

ABSTRACT

Background: The prevalence and clinical presentation of acne vulgaris in Latin America are comparable to that in Europe and the United States. This review aims at insight into the role of Over the Counter (OTC) products in acne treatment and maintenance in Latin America.

Methods: A panel of dermatologists from Latin America employed an online procedure to answer questions on this topic: What is used, by whom, when, how, and why? Before the meeting, a survey was completed by dermatologists from Latin America on OTC products for acne recommended by the panel in their clinical practice. The survey information and a literature review on Latin American acne guidelines and clinical studies were used to address this topic.

Results: The survey responders' choices on OTC products for monotherapy comprised alpha-hydroxy acid and beta-hydroxy acid-containing serum, ceramides-containing foaming cleanser, a soap-free exfoliating cleanser, adapalene, and benzoyl peroxide-containing products. The clinicians recommended OTC cleansing products mainly for younger patients at a starter level and for women with adult acne. The use of these OTC products is similar to practice described in therapeutic acne guidelines and algorithms for Latin American countries, Spain and Portugal, Europe, and the United States.

Conclusions: Advisors agreed that OTC products and skincare recommendations, in addition to the use of prescription medications, are a crucial part of successful acne therapy. Participants noted that the use of quality OTC products could improve acne symptomatology and severity.

LATAM Survey on OTC acne treatment and skincare: Monotherapy

Latin America (LATAM)

Andriessen A et al. *J Drugs Dermatol*. 2021;20(4): 244-250.

Survey Treatment Choice Monotherapy

Product	First Choice	Second Choice	Third Choice
AHA and BHA serum ^a	1	--	3
Ceramides containing foaming cleanser ^b	1	--	--
Exfoliating soap free cleanser ^c	1	1	--
BPO with or without AB ^d	1	--	--
Retinoid gel ^e	2	1	--
BPO and lipo-hydroxy acid cream ^f	1	2	--
Lotion ^g	--	1	--
Cleansing gel ^h	--	1	--
Phytosolution gel cleanser ⁱ	--	1	--
AHA gel ^j	--	--	1
GA lotion or gel ^d	--	--	1
Spot gel ^k	--	--	1
Who?	Younger patients, starter level, women adult acne		
When?	Mild to moderate but mostly mild acne		
Where?	Face and chest		
How?	Once or twice a day		
Why?	Easy/pleasant to use, texture, tolerance, anti-inflammatory properties and results		

^aBlemish and age serum, SkinCeuticals; ^bCeraVe foaming cleanser; ^cSebiaclear cleanser, SVR; ^dNo brand ; ^eDifferin, Adapalene gel, Galderma; ^fEffaclar Duo SPF, LRP; ^gDry lotion, Secatriz; ^hEffaclar cleansing gel, LRP; ⁱNormaderm gel cleanser, Vichy; ^jNeostrata CLARIFY 15 AHA gel; ^kBABE stop AKN stop Control, BABE; Benzoyl peroxide (BPO); Alpha hydroxy acid (AHA); Beta hydroxy acid (BHA); Antibiotics (AB); Glycolic acid (GA); La Roche-Posay (LRP).

LATAM Survey on OTC acne treatment and skincare: Adjunctive treatment

Latin America (LATAM)

Andriessen A et al. *J Drugs Dermatol*. 2021;20(4): 244-250.

Survey Adjunctive Treatment Choice			
Product	First Choice	Second Choice	Third Choice
Phytosolution gel cleanser ^a	1	1	--
BPO and lipo-hydroxy acid cream ^b	1	1	--
Ceramides containing foaming cleanser ^c	1	--	--
Serum niacinamid ^d	1	--	--
Retinoid + BPO ^e	1	--	--
BPO and lipo-hydroxy acid and SPF ^f	--	1	--
Ceramides containing micellar cleanser ^g	--	1	--
Tonic with purified water ^c	--	1	--
Formulated products containing tretinoin ^c	--	1	--
Lotion with SA ^h	--	1	--
Sunscreen ⁱ	--	--	1
HA containing serum ⁱ	--	--	1
Exfoliating moisturizer ^k	--	--	1
Serum ^c	--	--	1
SPF product ⁱ	--	--	1
BPO 5% ^l	--	--	1
Who?	All patients		
When?	Moderate-to-severe but mostly moderate acne		
Where?	Face		
How?	Once or twice a day, morning or evening, full face or spot treatment, preparation for other products		
Why?	Cosmetically elegant (texture), non-irritating well tolerated, anti-inflammatory, repairs skin barrier, hyperchromia post acne, follicular occlusion, seboregulatory		

^aNormaderm gel cleanser, Vichy; ^bEffaclar Duo, LRP; ^cCeraVe foaming cleanser; ^dLocal formulation; ^eEpiduo, Galderma; ^fEffaclar Duo SPF, LRP; ^gCeraVe micellar cleansing water; ^hNormaderm Skin Corrector, Vichy; ⁱVichy ideal soleil, anti-acne; ^jMineral 89 Serum, Vichy; ^kEffaclar K, LRP; ^lClindoxyl control 5%, Stiefel; Benzoyl peroxide (BPO); Salicylic acid (SA); Sun protection factor (SPF); Hyaluronic acid (HA); La Roche-Posay (LRP).

LATAM Survey on OTC acne treatment and skincare: Maintenance treatment

Latin America (LATAM)

Andriessen A et al. *J Drugs Dermatol*. 2021;20(4): 244-250.

Survey Adjunctive Treatment Choice			
Product	First Choice	Second Choice	Third Choice
Phytosolution gel cleanser ^a	1	1	--
BPO and lipo-hydroxy acid cream ^b	1	1	--
Ceramides containing foaming cleanser ^c	1	--	--
Serum niacinamid ^d	1	--	--
Retinoid + BPO ^e	1	--	--
BPO and lipo-hydroxy acid and SPF ^f	--	1	--
Ceramides containing micellar cleanser ^g	--	1	--
Tonic with purified water ^c	--	1	--
Formulated products containing tretinoin ^c	--	1	--
Lotion with SA ^h	--	1	--
Sunscreen ⁱ	--	--	1
HA containing serum ⁱ	--	--	1
Exfoliating moisturizer ^k	--	--	1
Serum ^c	--	--	1
SPF product ⁱ	--	--	1
BPO 5% ^l	--	--	1
Who?	All patients		
When?	Moderate-to-severe but mostly moderate acne		
Where?	Face		
How?	Once or twice a day, morning or evening, full face or spot treatment, preparation for other products		
Why?	Cosmetically elegant (texture), non-irritating well tolerated, anti-inflammatory, repairs skin barrier, hyperchromia post acne, follicular occlusion, seboregulatory		

^aNormaderm gel cleanser, Vichy; ^bEffaclar Duo, LRP; ^cCeraVe foaming cleanser; ^dLocal formulation; ^eEpiduo, Galderma; ^fEffaclar Duo SPF, LRP; ^gCeraVe micellar cleansing water; ^hNormaderm Skin Corrector, Vichy; ⁱVichy ideal soleil, anti-acne; ^jMineral 89 Serum, Vichy; ^kEffaclar K, LRP; ^lClindoxyl control 5%, Stiefel; Benzoyl peroxide (BPO); Salicylic acid (SA); Sun protection factor (SPF); Hyaluronic acid (HA); La Roche-Posay (LRP).

LATAM Survey on OTC acne treatment and skincare: Cleansers and moisturizers

Latin America (LATAM)

Andriessen A et al. *J Drugs Dermatol.* 2021;20(4): 244-250.

Acne Cleansers and Moisturizers Action and Features	
Type of OTC Acne Treatment	Action/Features of the Products
Monotherapy: Mainly used for mild acne	Well tolerated, anti-inflammatory, easy and comfortable to use, cosmetically pleasant texture
Adjunctive therapy: Mainly used for moderate acne in combination with prescription treatment	Non-irritating, well tolerated, anti-inflammatory, repairs skin barrier, addresses hyperchromia post-acne, follicular occlusion, seborregulatory, and pleasant texture.
Maintenance therapy	Anti-inflammatory action, prevention of acne flares, oil control, and minimization of scars. Features include: texture, non-oily, and non-irritating.
BPO containing products	Available as creams, gels, lotions, and washes, can treat mild acne, or can be used as adjunctive treatment or as component of fixed combinations. Is effective but may cause irritation
SA containing products	Salicylic acid, available in creams, lotions, and pads, helps resolve the irregular shedding of cells. For mild acne, it can unclog pores as it is fat soluble, but has no antimicrobial activity.
GA containing products	Available as creams, gels, lotions, accelerates collagen synthesis by fibroblasts and also modulation of matrix degradation and collagen synthesis through keratinocyte-released cytokines. There is a risk for increased UV-induced pigmentation when using these products.
Retinoid containing products	Topical retinoids decrease the formation of acne by changing cell-growth and decreasing inflammation. They are used to treat moderate-to-severe acne often in combination with other products, such as BPO and oral antibiotics. AEs include dryness, pruritus, and erythema.
Azaleic acid containing products	Azelaic acid helps normalizing follicular hyperkeratinization by a cytostatic effect on keratinocytes. It decreases proliferation of C. acnes by inhibiting protein synthesis and reduces inflammation. Effective for mild to moderate papular-pustular acne, particularly in patients with sensitive and darker skin, as well as in adult acne in women.
Ceramides containing cleansers and moisturizers	Acne affected skin may have reduced ceramide levels resulting in skin barrier dysfunction which correlates with hyperkeratinization and comedone formation. A ceramide containing skincare regimen supports the removal of excess sebum and debris on the skin surface (cleansing) and improves skin barrier (moisturizing) function.
Cleansers and moisturizers containing TSW	May help restore the skin microbiome reducing inflammation.
AHA and BHA containing products	Available as creams, gels, serums, and lotions, they are both exfoliants and moisturizers and may have antiaging properties. In OTC products low concentrations (4%–10%) are used.
Sunscreen with an SPF of at least 30	Sunscreens prevent postinflammatory hyperpigmentation.
HA containing products	HA encompasses a large volume of water giving solutions high viscosity, even at low concentrations. Used as a moisturizer to help improve skin hydration.
Benzoyl peroxide (BPO); Alpha hydroxy acid (AHA); Beta hydroxy acid (BHA); Glycolic acid (GA); Salicylic acid (SA); Sun protection factor (SPF); Hyaluronic acid (HA); Adverse events (AEs); Thermal spring water (TSW)	

OTC acne treatment and skincare in acne SOC patients

- OTC monotherapy is used for mild acne
- OTC adjunctive therapy is mainly applied for moderate acne in combination with prescription treatment.
- Reasons for using OTC maintenance therapy are anti-inflammatory action, prevention of acne flares, oil control, and minimization of scars.
- Common ingredients in acne products (eg, BPO and retinoids) are effective but may cause skin irritation and impair the skin barrier function.
- Ceramides containing skincare may offer acne patients benefits to help restore skin barrier function.

Over-the-counter (OTC), Skin of color (SOC), Benzoyl peroxide (BPO)

Andriessen A et al. *J Drugs Dermatol.* 2021;20(4): 244-250.



Statement 3:

Decreased ceramide levels have been demonstrated in the skin of African Americans.



Ceramide levels are significantly reduced in patients with inflammatory skin conditions

TEWL is significantly higher in patients with AD¹, Acne², Psoriasis¹, and Eczema¹

Disease	Decrease of ceramides
Psoriasis ⁴	Ceramides 1, 3, 6 ↓
Ichthyosis ⁵	Ceramides 1, 6 ↓
Acne vulgaris ⁶	Linoleate in Ceramide 1 ↓
Atopic dermatitis ³	Ceramides 3, 6 ↓
Surfactant-induced dermatitis ⁷	Ceramides 1 ↓

1. Choi MJ, Maibach HI. *Am J Clin Dermatol*. 2005;6(4):215-223.
2. Yamamoto A., et al. *Arch Dermatol Res*. 1995;287:214-218
3. Di Nardo A. et. al., *Acta Derm Venereol*. 1998;78:27-30.
4. Motta S. et al., *Arch. Dermatol*. 130, 452-456. 1994
5. Paige DG. et al., *Proc. Br. J Dermatol*. 131, 23-7. 1994
6. Yamamoto A., et al. *Arch Dermatol Res*. 1995;287:214-218
7. Di Nardo A. et. al., *Contact Dermatitis* 35, 86-91. 1996

CER EOP = Ceramide 1
CER NP = Ceramide 3
CER AP = Ceramide 6-II

Acne – Compromises Barrier Integrity

Functional

- Sebum excretion higher
- Sebaceous glands larger
- Subclinical inflammation

Ultrastructural

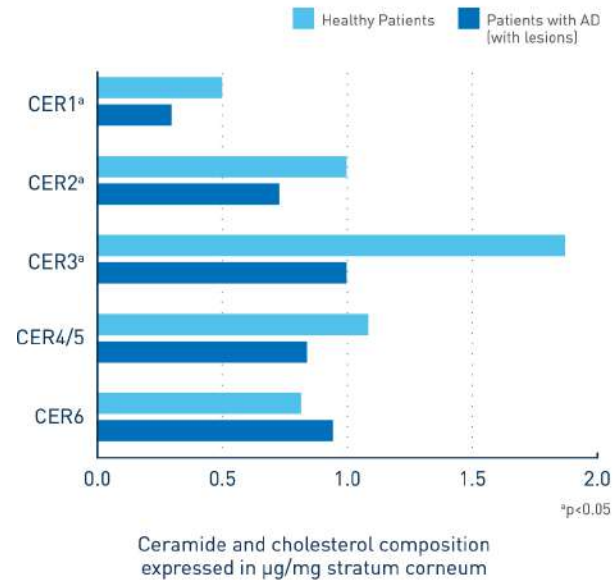
- ↑ filaggrin expression
- ↓ free fatty acids
- ↓ linoleic acid
- ↓ free sphingosine and total ceramides

Ceramide levels are significantly reduced in patients with skin conditions, cont.

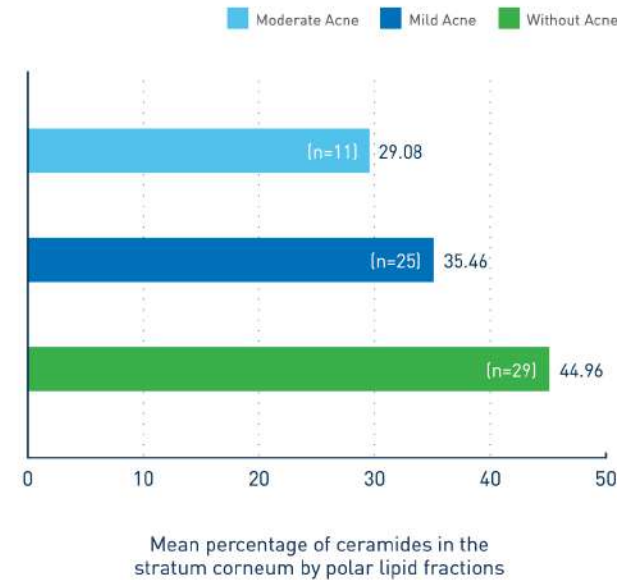
5. Paige DG et al. *Proc. Br. J Dermatol.* 131, 23-7. 1994.

6. Yamamoto A et al. *Arch Dermatol Res.* 1995;287:214-218

Ceramide levels are significantly lower in patients with atopic dermatitis (AD)⁵



Ceramide levels are significantly lower in patients with facial acne⁶



Acne and decreased ceramide levels

- Although evidence is scarce, researchers are increasingly interested in SC barrier dysfunction in acne patients, which directly affects comedogenesis and inflammation.¹
- For SOC patients with acne, there are only a few small studies.
- A Japanese study² on male patients with mild-to-moderate acne (n=36, age range 14 to 26 years), and age-matched male control subjects (n=29) evaluated SC sebum secretion, lipids, TEWL, and conductance:
 - Acne patients exhibited markedly higher sebum secretion, greater TEWL and decreased SC hydration which was more significant in those with moderate compared to mild acne and normal control subjects.
 - Acne patients SC had significantly reduced free sphingosine and total ceramides.

1. Del Rosso JQ. *J Drugs Dermatol*. 2013 June 1;12(6):626-31.

2. Yamamoto A, et al. *Arch Dermatol Res*. 1995;287(2):214–218.

Impaired water barrier function in acne

Ayako Yamamoto · Kaoruko Takenouchi · Masaaki Ito

Impaired water barrier function in acne vulgaris

A Japanese study² including male patients with mild-to-moderate acne (n=36, age range 14 to 26 years), and age-matched male control subjects (n=29) evaluated SC sebum secretion, lipids, TEWL, and conductance

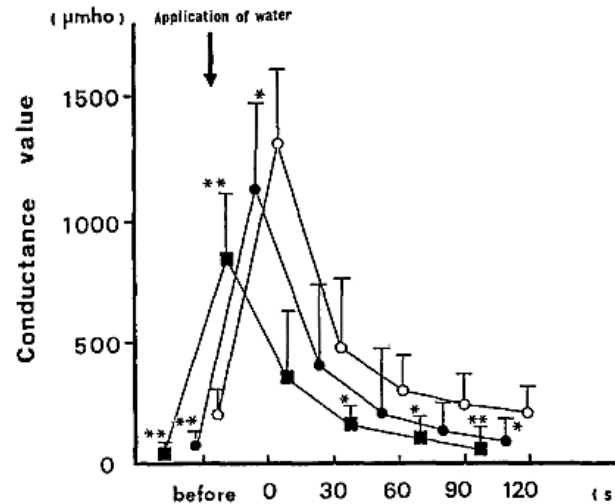


Fig. 1 Results of the water sorption-desorption test for patients with mild (●) and moderate acne (■) and control subjects (○). Bars represent SD. * $P < 0.05$, ** $P < 0.01$ versus control subjects

Table 1 Comparison of water barrier function between acne patients and control subjects

Values are mean \pm SD
 ** All values significantly different ($P < 0.01$) from one another

	Acne patients		Control subjects (n = 29)
	Moderate (n = 11)	Mild (n = 25)	
TEWL (g/m ² /h)	16.8 \pm 3.8**	14.4 \pm 2.5**	10.3 \pm 2.4**
Conductance ($\mu\Omega^{-1}$)	52.1 \pm 6.7**	92.8 \pm 8.0**	188.9 \pm 12.7**

Impaired water barrier function in acne, cont.

Arch Dermatol Res (1995) 287:214–218

ORIGINAL PAPER

Ayako Yamamoto · Kaoruko Takenouchi · Masaaki Ito

Impaired water barrier function in acne vulgaris

A Japanese study² including male patients with mild-to-moderate acne (n=36, age range 14 to 26 years), and age-matched male control subjects (n=29) evaluated SC sebum secretion, lipids, TEWL, and conductance

Table 2 Sebum secretion rates (mg/40 cm²/3 h) and mean weights (μg/cm²) of the stratum corneum lipid fraction of acne patients and control subjects

	Acne patients		Control subjects (n = 29)
	Moderate (n = 11)	Mild (n = 25)	
Sebum secretion rates	13.23 ± 2.85*	9.83 ± 2.55	10.58 ± 4.30
Squalene	27.42 ± 4.46	16.37 ± 3.80	16.66 ± 2.58
Wax esters	51.03 ± 7.10	36.60 ± 5.50	39.21 ± 3.39
Triglycerides	40.88 ± 6.00	35.33 ± 3.50	35.81 ± 3.18
Free fatty acids	27.81 ± 1.32	31.24 ± 3.57	31.54 ± 3.16
Cholesterol	5.79 ± 0.71	6.53 ± 0.80	5.72 ± 0.65
Cholesterol esters	7.65 ± 0.30	6.85 ± 0.94	5.77 ± 0.87
Cholesterol sulphate	0.54 ± 0.18	0.74 ± 0.20	0.87 ± 0.18
Total ceramides	3.40 ± 0.45*	4.07 ± 0.87*	6.49 ± 0.98
Phospholipids	0.77 ± 0.15	0.75 ± 0.21	0.79 ± 0.09
Total lipids	165.29 ± 20.1	138.48 ± 10.22	142.86 ± 15.75

Values are mean ± SD
* $P < 0.05$ versus control subjects

Table 3 Mean percentages of free sphingosine and total ceramides in the polar lipid fractions from the stratum corneum of acne patients and control subjects

Sphingolipid	Acne patients		Control subjects (n = 29)
	Moderate (n = 11)	Mild (n = 25)	
Free sphingosine	0.18 ± 0.05**	0.30 ± 0.07**	0.74 ± 0.09**
Total ceramides	29.08 ± 2.07**	35.46 ± 3.94**	44.96 ± 5.83**

Values are mean ± SD
** All values significantly different ($P < 0.1$) from one another

Is skin pH different in those with acne in India?

- ◆ N=200 with acne; N=200 controls
- ◆ Skin pH levels (Skin-pH Meter)

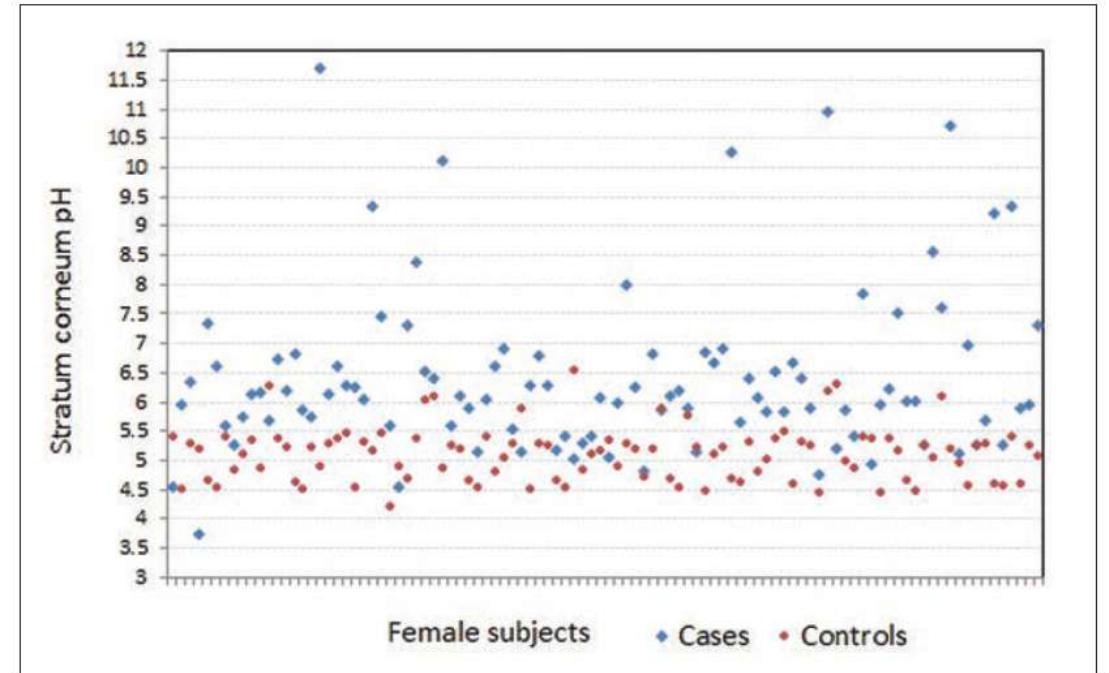
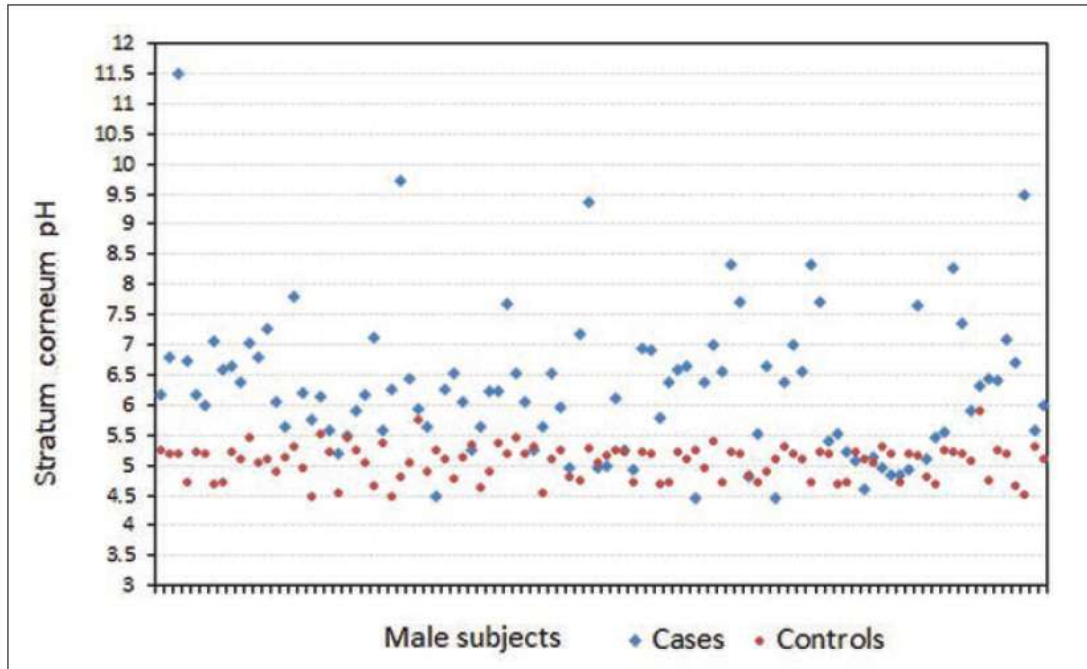
SKIN SURFACE pH IN ACNE VULGARIS: Insights from an Observational Study and Review of the Literature

by CHAITRA PRAKASH, MD; PUNEET BHARGAVA, MD; SIDDHI TIWARI, MD; BANASHREE MAJUMDAR, MD; and RISHI KUMAR BHARGAVA, MD

Drs. Prakash, P. Bhargava, Tiwari, and Majumdar are with the Department of Dermatology, Venereology and Leprosy, Sawal Man Singh Medical College and Attached Hospitals, Jaipur, Rajasthan, India. Dr. R.K. Bhargava is with Girdhar Hospital and Research Centre, Jaipur, Rajasthan, India.

J Clin Aesthet Dermatol. 2017;10(7):33–39

Elevated pH in acne patients, both genders



Mean pH 5.09 ± 0.39 controls versus 6.35 ± 1.30 acne cases ($p < 0.001$).

Study results on TEWL comparing Black vs. White skin vary

- Studies investigating differences in Black versus White skin have yielded variable results
 - Five studies found that TEWL is greater in Black skin than White skin¹⁻⁵
 - Seven found no difference⁶⁻¹¹
 - Two reported decreased TEWL in Black patients^{12,13}
- There has been no difference demonstrated in TEWL between Hispanic and White skin^{2,11}
- The diversity of Fitzpatrick skin types and ancestral heritage of the Hispanic population contributes to the complexity of interpreting such studies

1. Kompaore F, et al. *Skin Pharmacol.* 1993;6(3):200-207.
2. Berardesca E, et al. *Contact Dermatitis.* 1988;18(2):65-70.
3. Sugino K, et al. . *J. Invest. Dermatol.* 1993;100: 587.
4. Wilson D, et al. *Br J Dermatol.* 1988;119(5):647-652.
5. Barardesca E, et al. *Br J Dermatol.* 1998;139(5):855-857.
6. Pinnagoda, et al. *Contact Dermatitis.* 1990;22(3):164-178.
7. Grimes P, et al. *Cutis.* 2004;73(6):392-396.
8. Luther N, et al. *Skin Pharmacol Physiol* 2012;25:182–191.
9. Young MM, et al. *Skin Res Technol.* 2019;25:88–95.
10. Reed JT, et al. *Arch Dermatol.* 1995;131(10):1134-1138.
11. Barardesca E, et al. *Dermatologica.* 1991;182(2):89-93.
12. Muizzuddin N, et al. . *J Dermatol Sci* 2010;59:123–128.
13. Warriar A et al. . *J Cosmet Sci.* 1996;47:229-240.



Statement 4:

-Acne-related PIH in the SOC individual can be as bothersome as the acne lesions themselves. Thus, the therapeutic endpoint of acne treatment in SOC patients includes the resolution of PIH and long-term control of underlying acne vulgaris.

Acne-related PIH in SOC patients

- PIH results from the overproduction of melanin after cutaneous inflammation.
- Although the exact mechanism is unknown, there is an increase in melanocyte activity, stimulated by prostanoids, cytokines, chemokines, and other inflammatory mediators and reactive oxygen species that are released during the inflammatory process.³⁷
- Also, common acne treatments can be drying and contribute to PIH if the patient develops significant irritation.^{38,39}

Safety of Topical Acne Treatments in Fitzpatrick Skin Type IV-VI

Topical Agent	Studies including Fitz IV-VI
Azelaic acid	✓
Benzoyl peroxide	✓
Dapsone	✓
Adapalene	✓
Tretinoin	✓
Tazarotene	✓
Adapalene-benzoyl peroxide	✓
Clindamycin-benzoyl peroxide	✓
Clindamycin-tretinoin	✓
Clascoterone	

Safe and effective treatment options for SOC acne patients

TOPIC/TREATMENT	FINDINGS	REFERENCE
Tretinoin 0.05% Lotion	Post hoc analysis of 2 Phase 3 RCTs on moderate-to-severe acne. Significant reduction in IF and well tolerated with more dryness reported in young white females	Lain E. J Drugs Dermatol. 2019 Nov 1;18(11):1128-1138.
	Effective and well tolerated in Asians with moderate-to-severe acne	Han G. J Drugs Dermatol. 2019 Sep 1;18(9):910-916.
	Effective in moderate-to-severe acne in Hispanics	Downie J, Cook-Bolden FE, Nevins Taylor B. 2019; Epub Mobi Kindle:1-346.
Adapalene/benzoyl peroxide gel 0.3%/2.5%	Subgroup analysis in black subjects with moderate acne showed that treatment was safe and effective	Alexis AF. J Drugs Dermatol. 2014 Feb;13(2):170-4.
Clindamycin 1.2%/benzoyl peroxide 3.75% gel	Well tolerated in Hispanic subjects with acne	Alexis AF. V J Clin Aesthet Dermatol. 2017;10:36-43.
	Effective and well tolerated in Hispanics with moderate-to-severe acne	Cook-Bolden FE. J Drugs Dermatol. 2012 Apr;11(4):455-9.
Clindamycin/Tretinoin	Safe and effective for acne and acne-induced PIH in SOC patients	Callender VD. J Clin Aesthet Dermatol. 2012;5(7):25-32.
Topical dapsone gel, 5%	Safe and effective for acne in females with SOC	Alexis AF. J Drugs Dermatol. 2016;15:197-204.
Topical dapsone gel, 7.5%	Once daily treatment with for acne is safe and effective: Subgroup analysis of pooled data from two RCTs	Draelos ZD, J Drugs Dermatol. 2017;16:591-598.
	Effective, safe and well tolerated by all Fitzpatrick skin phototypes	Taylor SC. J Drugs Dermatol. 2018;17:160-167.
Polymeric Tazarotene 0.045% Lotion	Used for moderate-to-severe acne at 12 weeks treatment a significant lesion reduction and well tolerated across racial and ethnic groups.	Bhatia ND. J Drugs Dermatol. 2020 July 1;19(7):727-734.

Retinoids are first-line treatment for acne

- Retinoids are recommended as a first-line treatment in acne guidelines¹⁻⁸
- They are particularly useful in the management of acne in SOC due to their dual effects on PIH resolution as well as acne.
- For all patients, including SOC patients, retinoid use should be titrated to decrease irritation and maximize efficacy¹⁻⁵

1. Thiboutot DM, et al. *J Am Acad Dermatol*. 2018;78(2S1):S1–23.
2. Zaenglein AL, et al. *J Am Acad Dermatol*. 2016;74(5):945-73.e33.
3. Asai Y, et al. *Can Med Ass J* 2016;188(2):118-126
4. Nast A, et al. *J Eur Acad Dermatol Venereol*. 2016;30(8):1261-8.
5. Bagatin E, et al. *An. Bras. Dermatol*. 2017;92 (5) 1-10.
6. Hayashi N, et al. *J Dermatol* 2018;45(8):898-935.
7. Acne Group, Chinese Society of Dermatology. *Int J Dermatol Venereol* 2019,2(3):129-137.
8. Sinclair W. *South African Fam Pract* 2017; 59(1):24-29

Combination treatments are safe and effective

- A subgroup analysis of self-identified black subjects from data of three studies involving 3,855 patients with moderate acne showed that ADAP 0.3%/ BPO 2.5% gel was safe and more effective than vehicle in reducing both inflammatory and noninflammatory acne lesions.¹
- Topical antibiotics such as clindamycin in combination with BP or a retinoid are shown to be effective and safe for SOC patients for acne and acne-induced PIH.²⁻⁴
- Both topical dapsone 5% and 7.5% gel are effective and safe in treating moderate acne in extensive studies, including SOC patients
 - Topical dapsone is an option as it is well-tolerated and effective for both inflammatory and noninflammatory lesions.⁵⁻⁷
- A pooled, post hoc analysis of data from two phase III studies included subsets of participants that self-identified as white (n=1191), Black (n=262), Hispanic (n=352) or non-Hispanic (n=1262)
 - The analysis showed that tazarotene 0.045% lotion was effective, safe, and well-tolerated in all ethnic groups and resulted in decreased incidence of PIH in black acne patients.⁸

Adapalene (ADAP); Skin of color (SOC);
Benzoyl peroxide (BPO);
Post-inflammatory hyperpigmentation (PIH)

1. Alexis AF, et al. *J Drugs Dermatol*. 2014 Feb;13(2):170-4.

2. Alexis AF, et al. *J Clin Aesthet Dermatol*. 2017;10:36-43

3. Callender VD et al. *J Clin Aesthet Dermatol*. 2012;5(7):25-32.

4. Cook-Bolden FE. *J Drugs Dermatol*. 2012 Apr;11(4):455-9.

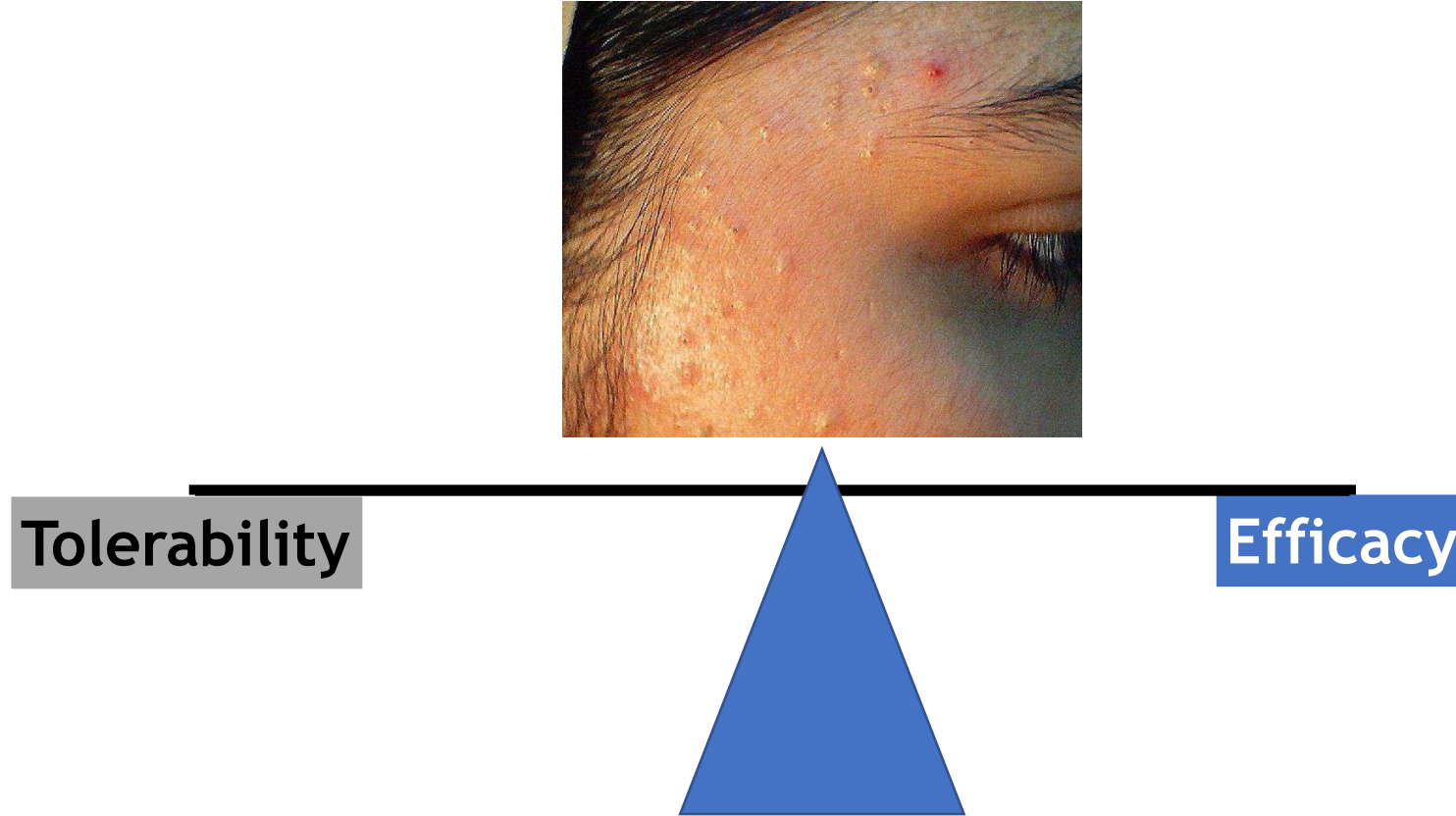
5. Alexis AF, et al. *J Drugs Dermatol*. 2016;15:197-204.

6. Draelos ZD, et al. *J Drugs Dermatol*. 2017;16:591-598.

7. Taylor SC et al. *J Drugs Dermatol*. 2018;17:160-167.

8. Bhatia N et al. *J Drugs Dermatol*. 2020;19(7):727-734.

Maximizing tolerability



Treatment regimens must not only be aggressive enough to reduce inflammation and other pathogenic factors, but also well tolerated so that irritation is avoided.

Maximizing tolerability, cont.

Discontinue	Discontinue potentially irritating toners, scrubs, astringents
Consider	Consider qohs dosing of retinoids for first 2 weeks
Start	Start with lower concentrations and titrate up
Apply	Apply non-comedogenic moisturizer on top of prescription topical if dryness, stinging/burning
Favor	Favor aqueous gels, lotion, or cream vehicles

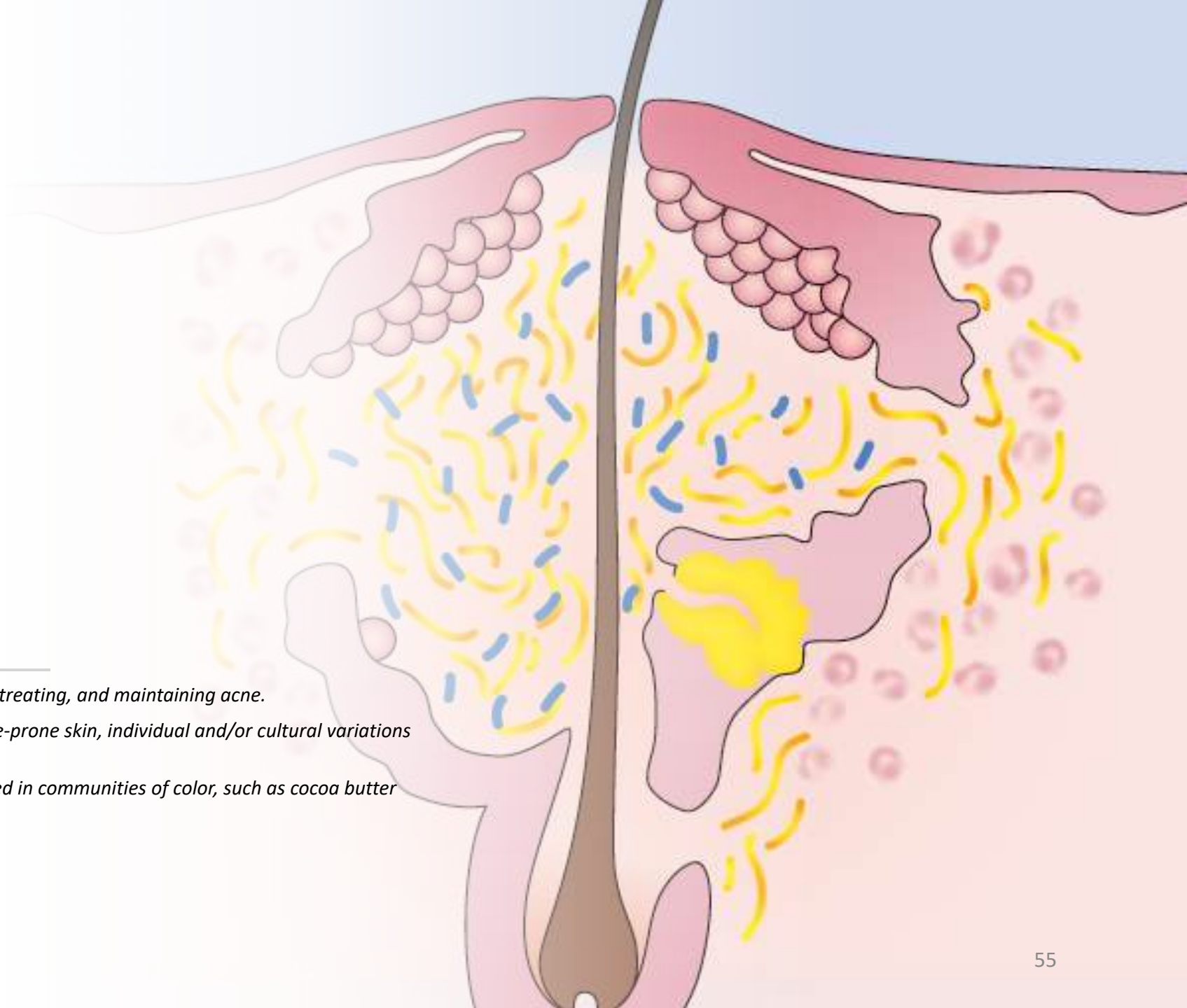
Maximizing tolerability

- Careful selection of topical regimen to minimize irritation
 - Molecule
 - Concentration
 - Vehicle
 - Dosing regimen
- Adjunctive skin care recommendations to minimize dryness, peeling, irritation



Statement 5:

- *Adjunctive skincare can play an essential role in preventing, treating, and maintaining acne.*
- *When selecting a cleanser and moisturizer for acne and acne-prone skin, individual and/or cultural variations in skincare preferences should be considered.*
- *Some skincare and haircare products that are commonly used in communities of color, such as cocoa butter and petrolatum, may exacerbate acne.*



Skincare for acne SOC patients

- Daily application of fragrance-free, non-irritating, and non-comedogenic cleansers, moisturizers, and sunscreen may reduce adverse events such as dryness, erythema, photosensitivity, and PIH resulting from topical drugs.^{1,2}
- Special consideration should be applied to SOC patients prone to PIH.
- Using the appropriate skincare is prudent in this population to minimize irritation.
- Skincare, such as non-comedogenic cleansers and moisturizers, have been successfully used to reduce skin irritation and can be especially useful in sensitive skin acne patients.³⁻⁷

1. Bagatin E, et al. *An. Bras. Dermatol.* 2017;92 (5) 1-10.

2. Hayashi N, et al. *J Dermatol* 2018;45(8)898-935.

3. Baldwin HE, et al. *Semi Cutan Med Surg* 30:S12-S15:12

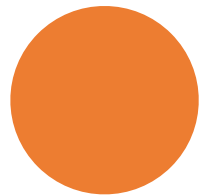
4. Yin BC, et al. *Am J Clin Dermatol.* 2014;15(1):7-16.

5. Aravijaskaia E, et al. *J Eur Acad Dermatol Venereol.* 2016; 30, 926–935.

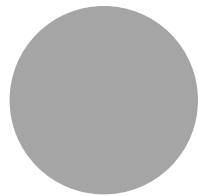
6. Dreno B et al. *J Cosmet Dermatol.* 2020;19(9):2201-2211.

7. Lynde CW et al. . *J Clin Aesthet Dermatol.* 2014;7(3):18-26.

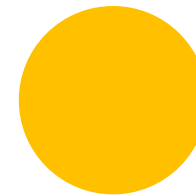
What does an ideal cleanser and moisturizer look like?



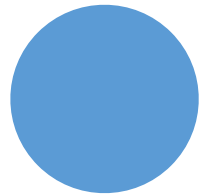
Safe



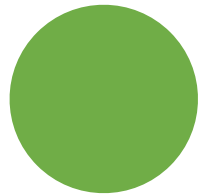
Effective



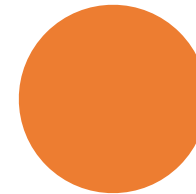
Cost-effective



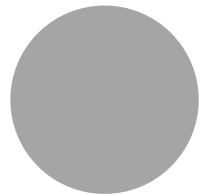
Additive free



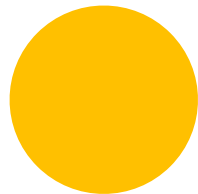
Fragrance free



Sensitizing agent
free



Pleasant to use



Should optimize
lipid and water
content of the sc



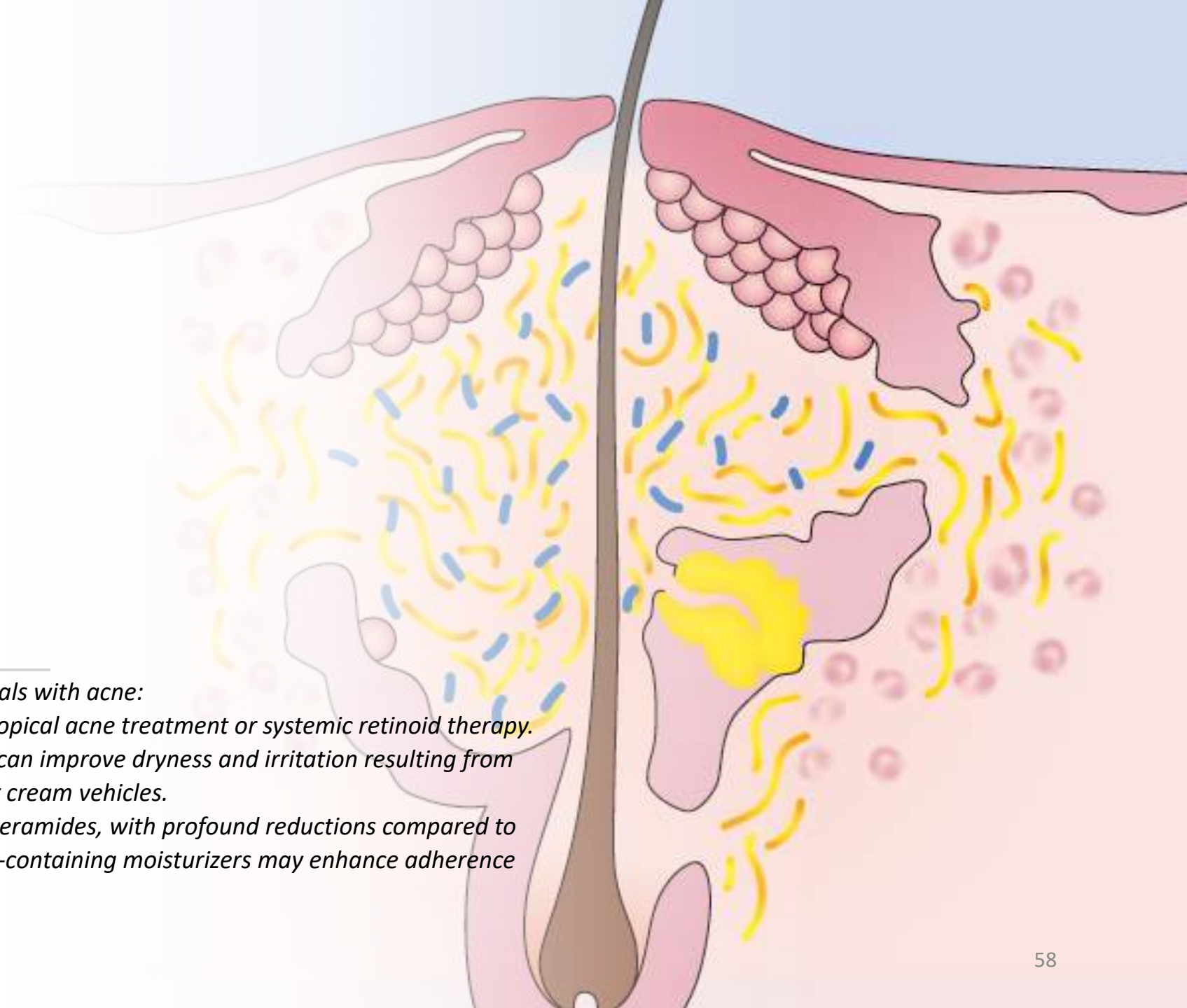
Patient
satisfaction

The choice of cleanser/moisturizer is dependent on individual preference

Statement 6:

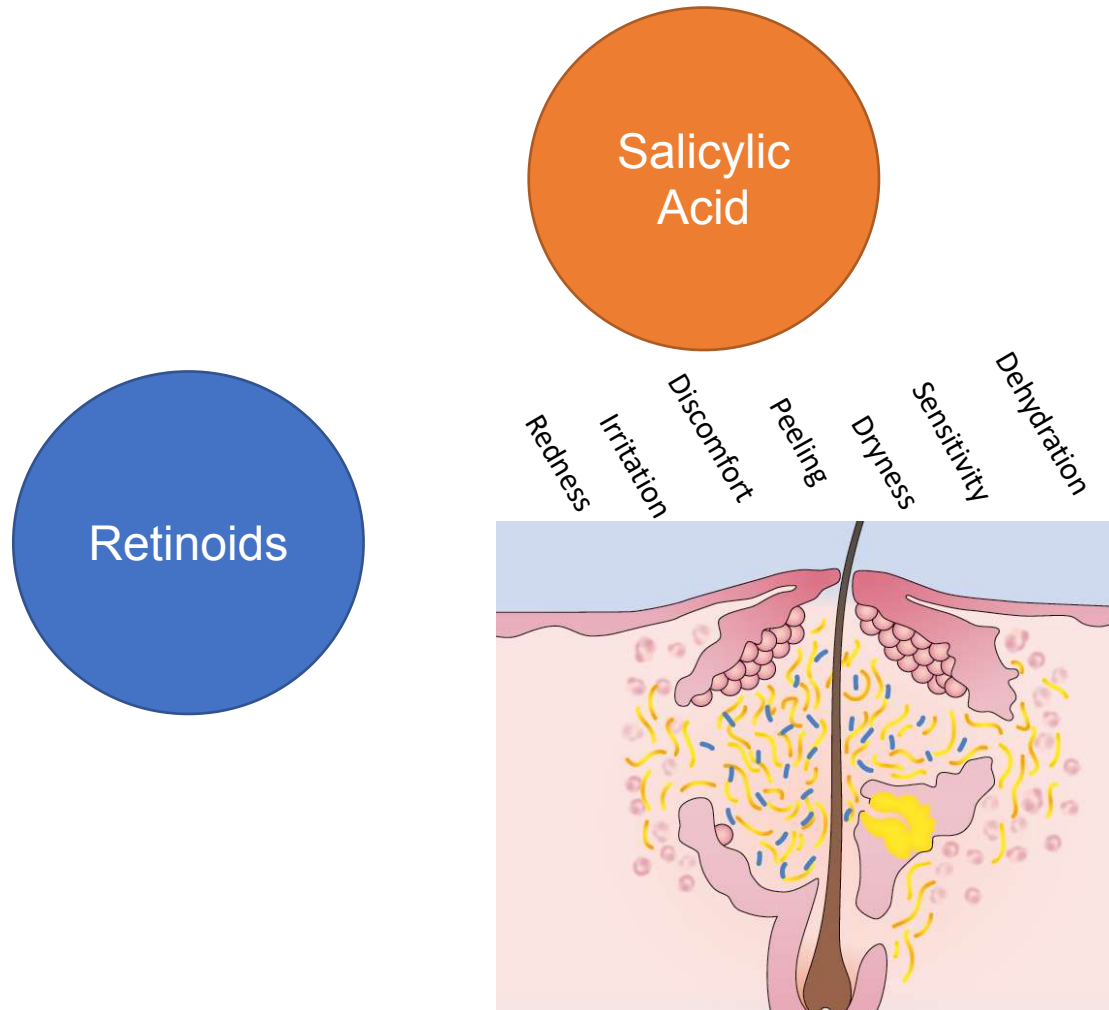
Special considerations when treating SOC individuals with acne:

- *Dry skin and irritation commonly result from topical acne treatment or systemic retinoid therapy.*
- *Non-comedogenic cleansers and moisturizers can improve dryness and irritation resulting from acne treatment. Favor aqueous gels, lotion, or cream vehicles.*
- *Acne-affected skin has shown lower levels of ceramides, with profound reductions compared to healthy individuals of all ethnicities. Ceramide-containing moisturizers may enhance adherence and complement existing acne therapies.*



Acne treatments impair skin barrier function

The skin of acne patients may be ceramide-deficient, when in contact with harsh acne treatments skin side effects may occur.



- Combination therapy addressing multiple pathogenic factors should be used to achieve optimal outcomes in treating acne.
- The study demonstrated both safety and efficacy of fixed-dose clindamycin phosphate 1.2%/benzoyl peroxide 2.5% in the morning with micronized tretinoin 0.05% gel in the evening.
- Both products were applied to the skin following the use of a ceramide containing moisturizing lotion.

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Efficacy and Safety of a Ceramide Containing Moisturizer Followed by Fixed-dose Clindamycin Phosphate 1.2%/Benzoyl Peroxide 2.5% Gel in the Morning in Combination With a Ceramide Containing Moisturizer Followed by Tretinoin 0.05% Gel in the Evening for the Treatment of Facial Acne Vulgaris

Joshua A. Zeichner MD, Rita V. Patel MD, Madelaine Haddican MD, and Vicky Wong BS
Mount Sinai School of Medicine, New York, NY

ABSTRACT

Combination therapy addressing multiple pathogenic factors should be used to achieve optimal outcomes in treating acne. The following study demonstrated both safety and efficacy of fixed-dose clindamycin phosphate 1.2%/benzoyl peroxide 2.5% in the morning with micronized tretinoin 0.05% gel in the evening. Both products were applied to the skin following the use of a ceramide containing moisturizing lotion.

J Drugs Dermatol. 2012;11(6):748-752

INTRODUCTION

The pathophysiology of acne vulgaris is multifactorial. Follicular hyperkeratinization, *Propionibacterium acnes* (*P. acnes*) proliferation, sebum production, and inflammation all contribute to the development of acne lesions.¹ Therefore, the ideal acne treatment is combination therapy using medications with complementary mechanisms of actions addressing these multiple pathogenic factors.² Consensus guidelines recommend the use of a topical retinoid plus an antimicrobial agent with or without benzoyl peroxide (BPO) as first-line therapy for most patients with mild to moderate acne.¹

Combination therapy with a topical retinoid in conjunction with a fixed dose topical BPO/clindamycin gel addresses three of the four major pathogenic factors in acne. Topical retinoids normalize abnormal follicular hyperkeratinization which prevents the formation of microcomedones.^{3,4} Retinoids also reduce inflammation in acne by down-regulating toll-like receptors,⁵ cytokines,⁶ and nitric oxide.⁷ Antimicrobial agents such as clindamycin reduce *P. Acnes* colonization on the skin and its subsequent pro-inflammatory effects.⁸ BPO is at the same time keratolytic, anti-inflammatory, and bactericidal.⁹ It is commonly used in combination with topical antibiotics to reduce the risk of antibiotic resistance.^{8,11} Moreover, the addition of BPO has been shown to give improvements even in patients with previously known bacterial resistance.¹²

The most common side of effects of topical acne medications are local cutaneous adverse events including erythema, dryness, and burning/stinging.^{1,2} For topical retinoids, the side effects are most common in the first two weeks, when the skin undergoes a period of "retinization," acclimating to the drug.¹³ Several strategies exist to minimize this irritation, including initiating therapy with a low strength drug and titrating up as tolerated, as well as attempts at improving skin barrier function.¹³⁻¹⁵ Unlike that of topical retinoids, the irritation potential of BPO is independent of this type of adjustment period and has been linked to concentration of the drug itself.¹⁶ It is important to minimize these side effects as they can interfere with patient adherence to applying their medications.¹⁷

In this report, we review the results of an open-label investigation to evaluate the safety and efficacy of combination therapy using a fixed-dose combination antimicrobial/BPO gel in the morning and a topical retinoid in the evening. The medications evaluated were clindamycin phosphate 1.2%/BPO 2.5% (CP/BPO) in an aqueous gel free of preservatives, surfactants, parabens, or alcohol (Acanya® Gel, Valeant Dermatology) in the morning and micronized tretinoin 0.05% in an aqueous gel containing hydrating ingredients (Atralin® Gel, Valeant Dermatology) in the evening. A ceramide containing moisturizer (CeraVe® Lotion, Valeant Dermatology) was applied to the skin prior to application of the medications in the morning and in the evening.

METHODS

Treatment Regimen

This open-label investigation was performed at a single center for a 12-week treatment period. In the morning, all patients were instructed to wash their faces with a non-soap cleanser (CeraVe® Hydrating Cleanser, Valeant Dermatology) then pat dry. They then

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Acne Vulgaris in Fitzpatrick Skin Type IV-VI *Exacerbating Factors*


- Occlusive skin products: cocoa butter, make-up
- Hair pomades – “hair grease” (petrolatum, mineral oil)
- Topical steroid-containing “fade creams”



Community and Internet: Cocoa butter treats hyperpigmentation

 **Effects of Cocoa Butter on African American Skin**

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find advice you can trust 


Hyperpigmentation


Another one of the effects of cocoa butter on African American skin is that it helps to reduce the appearance of dark spots that are caused by hyperpigmentation. Use it on your face for a more even skin tone. It can also be used on the legs and other parts of the body to even dark spots



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Items: 0

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("cocoa butter"[Supplementary Concept] OR "cocoa butter"[All Fields]) AND ("hyperpigmentation"[MeSH Terms] OR "hyperpigmentation"[All Fields])
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Acne Vulgaris in Fitzpatrick Skin Type IV-VI

Exacerbating Factors, cont.



Comedogenicity of Cocoa Butter (0-4 point scale)

Test article	Mean day 20 (Clinical)		Mean (Slide biopsy)	
	L	R	L	R
Petrolatum (Control)	1 ± 0	1.3 ± 0.5	1 ± 0	1.3 ± 0.5
Paraffin (Control)	1 ± 0	1.3 ± 0.5	1 ± 0	1 ± 0
Cocoa Butter (#81-C FDA-1B)	3.3 ± 0.5	3.3 ± 0.5	3.3 ± 0.5	3.6 ± 0.5
Cocoa Butter (#82-C FDA-2)	3 ± 0	3 ± 0	3.3 ± 0.5	3 ± 0
Cocoa Butter A	2.6 ± 0.5	3.3 ± 0.5	2.6 ± 0.5	2.6 ± 0.5
Cocoa Butter B	3.3 ± 0.5	3.6 ± 0.5	3.3 ± 0.5	3.3 ± 0.5
Cocoa Butter C	3 ± 0	3 ± 0	2.6 ± 0.5	2.6 ± 0.5
Cocoa Butter D	3.6 ± 0.5	4 ± 0	4 ± 0	4 ± 0
Cocoa Butter E	3.6 ± 0.5	4 ± 0	3.6 ± 0.5	3.6 ± 0.5
Cocoa Butter F	3.6 ± 0.5	3.6 ± 0.5	3.6 ± 0.5	3.6 ± 0.5
Cocoa Butter G	3.3 ± 0.5	3.6 ± 0.5	3.6 ± 0.5	3.6 ± 0.5
Cocoa Butter (Control)	3 ± 0	3 ± 0	3.3 ± 0.5	3 ± 0

Comedogenic potential scores ± standard deviation are based on a 5-point scale, in which 4 is the highest score. Results listed were obtained at the end of the 4-week test period (day 20) using visual and stereo-microscopic (slide biopsy) examination. The cocoa butter samples represented different commercial production batches.

Acne Vulgaris in Fitzpatrick Skin Type IV-VI

Exacerbating Factors, cont.



Hair pomades – “hair grease” (petrolatum, mineral oil)

Consider silicone-based hair serums (cyclomethacone, dimethicone):



Skin care additional to acne treatment

- Acne-affected skin may be more prone to irritation resulting from acne treatment.¹
- Systemic and topical medications, such as retinoids, antibiotics, and benzoyl peroxide are associated with skin-barrier alteration, causing irritation and dry skin conditions^{2,3}
- These unwanted effects can reduce adherence to treatment and therapeutic outcomes²⁻⁴
- OTC non-comedogenic cleansers and moisturizers have been successfully used to reduce skin irritation^{4,5}
- Products with a high pH are shown to interfere with the efficacy of topical treatments^{4,5}

1. Prakash C, et al. *J Clin Aesthet Dermatol*. 2017;10(7):33–39.

2. Nast A et al. *J Eur Acad Dermatol Venereol*. 2016;30(8):1261-8.

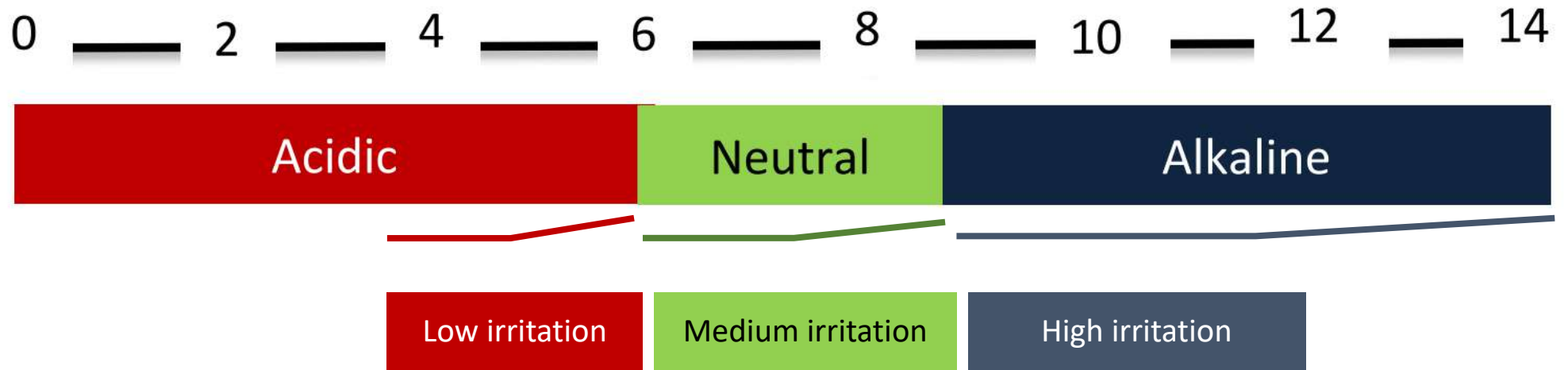
3. Gollnick HP. *J Eur Acad Dermatol Venereol*. 2015;29 Suppl 5:1-7.

4. Lynde CW, Andriessen A, Barankin B, et al. *J Cosmet Dermatol*. 2014;7(3):18-26.

5. Lynde CW, Tan J, Skotnicki S, Andriessen A, et al. *J Drugs Dermatol* 2019;18(12) S-1:1-16.

Topical formulation pH: Risk for irritation

Product pH



Risk for irritation

Cleansers and moisturizers close to physiologic skin surface pH (4.0–6.0) may reduce skin irritation and improve skin barrier function.

Preferred OTC products for acne

- Cleansers that do not contain soap with a near-physiological skin pH and moisturizers can be used to improve both topical treatment efficacy and tolerability.^{1,2}
- Preferred OTC products are cosmetically elegant (texture), non-irritating, well-tolerated, anti-inflammatory, and should help restore the skin barrier function.
- Hydrating cleansers may be the most appropriate type of cleanser for SOC acne-prone skin or those with acne as they are associated with a low risk of skin irritation.
- Effective moisturizers typically include ceramides, humectants, emollients, oil absorbers, or have anti-inflammatory and barrier replenishing properties.

1. Alexis AF. Acne in patients with skin of color. *J Drugs Dermatol*. 2011;10:s13–s16.

2. Lynde CW, et al. *J Drugs Dermatol* 2019;18(12) S-1:1-16.

3. Lynde CW, et al. *J Clin Aesthet Dermatol*. 2014;7(3):18-26.

Types of OTC acne treatment

Benzoyl peroxide (BPO); Alpha hydroxy acid (AHA); Beta hydroxy acid (BHA); Glycolic acid (GA); Salicylic acid (SA); Sun protection factor (SPF); Hyaluronic acid (HA); Adverse events (AEs); Thermal spring water (TSW), Post-inflammatory hyperpigmentation (PIH)

Type of OTC acne treatment

Action/features of the products

Monotherapy: Mainly used for mild acne.	Well tolerated, anti-inflammatory, easy and comfortable to use, cosmetically pleasant texture
Adjunctive therapy: Mainly used for moderate acne in combination with prescription treatment	Non-irritating, well tolerated, anti-inflammatory, repairs skin barrier, addresses hyperchromia post-acne, follicular occlusion, seborregulatory, and pleasant texture.
Maintenance therapy	Anti-inflammatory action, prevention of acne flares, oil control, and minimization of scars. Features include: pleasing texture, non-oily, and non-irritating.
BPO containing products	Available as creams, gels, lotions, and washes, can treat mild acne, or can be used as adjunctive treatment or as component of fixed combinations. Is effective but may cause irritation.
SA containing products	Salicylic acid, available in creams, lotions, and pads, helps resolve the irregular shedding of cells. For mild acne, it can unclog pores as it is fat soluble, but has no antimicrobial activity.
GA containing products	Available as creams, gels, lotions. There is a risk for increased UV-induced pigmentation when using these products.
Retinoid containing products	Topical retinoids decrease the formation of acne. They are used to treat moderate-to-severe acne often in combination with other products, such as BPO and oral antibiotics. AEs include dryness, pruritus, and erythema.


Types of OTC acne treatment, cont

Benzoyl peroxide (BPO); Alpha hydroxy acid (AHA); Beta hydroxy acid (BHA); Glycolic acid (GA); Salicylic acid (SA); Sun protection factor (SPF); Hyaluronic acid (HA); Adverse events (AEs); Thermal spring water (TSW), Post-inflammatory hyperpigmentation (PIH)

Type of OTC acne treatment

Action/features of the products

Azelaic acid containing products	Azelaic acid helps normalizing follicular hyperkeratinization and decreases proliferation of <i>C. acnes</i> . Effective for mild to moderate papular-pustular acne, particularly in patients with sensitive and darker skin, as well as in adult acne in women.
Ceramides containing cleansers and moisturizers	Acne affected skin may have reduced ceramide levels resulting in skin barrier dysfunction which correlates with hyperkeratinization and comedone formation. A ceramides containing skincare regimen supports the removal of excess sebum and debris on the skin surface (cleansing) and improves skin barrier (moisturizing) function.
Cleansers and moisturizers containing TSW	May help restore the skin microbiome reducing inflammation.
AHA and BHA containing products	Available as creams, gels, serums and lotions, they are both exfoliants and moisturizers and may have antiaging properties. In OTC products low concentrations (4%-10%) are used.
Sunscreen with an SPF of at least 30	Sunscreens help prevent UV-induced inflammation and PIH.
HA containing products	HA encompasses a large volume of water giving solutions high viscosity, even at low concentrations. Used as a moisturizer to help improve skin hydration.

A close-up photograph of a person's skin, showing numerous small, raised, inflamed acne lesions (papules and pustules) alongside larger, irregular, dark brown patches of postinflammatory hyperpigmentation (PIH). The skin tone is medium-dark. An orange horizontal bar is visible in the top right corner of the image area.

Incorporate agents that treat active acne and PIH concurrently

HQ monotherapy can be effective in treating PIH.

HQ has been formulated with other agents, such as retinoids, antioxidants, glycolic acid, sunscreens, and corticosteroids, to increase efficacy.

Skincare is a necessary part of acne treatment

- A consensus paper stated that dryness and skin irritation resulting from acne treatment could be improved using ceramide-containing cleansers and moisturizers, enhancing treatment adherence.¹
- The authors proposed that the skincare regimen should be an essential part of the acne prevention, treatment, and maintenance care regimen.¹
- Skincare is a necessary part of acne treatment and is part of various acne guidelines.¹⁻⁸
- The type of acne and individual patient characteristics can help determine the appropriate OTC skincare when used in conjunction with topical or systemic acne therapies.

1. Lynde CW, et al. *J Clin Aesthet Dermatol*. 2014;7(3):18-26.

2. Lynde CW, et al. *J Drugs Dermatol* 2019;18(12) S-1:1-16.

3. Bagatin E, et al. *An. Bras. Dermatol*. 2017;92 (5) 1-10.

4. Hayashi N, et al. *J Dermatol* 2018;45(8)898-935.

5. Baldwin HE, et al. *Semi Cutan Med Surg* 30:S12-S15:12

6. Yin BC, et al. *Am J Clin Dermatol*. 2014;15(1):7-16.

7. Aravijskaia E, et al. *J Eur Acad Dermatol Venereol*. 2016; 30, 926–935.

8. Dreno B et al. *J Cosmet Dermatol*. 2020;19(9):2201-2211.

Not all moisturizers are created equal

Cork M et al. J Invest Dermatol 2009;129:1892-1908.

Emollients	Effect	Ceramides containing moisturizer
Occlusive barrier	Reduce water loss (TEWL)	White soft paraffin
Film formers	Help create a protective barrier	Dimethicone
Humectants	Bind water	Glycerin Sodium Hyaluronate
Physiologic lipids	Components of the stratum corneum lipid matrix	Triglycerides Ceramide NP, AP, EOP Phytosphingosine Cholesterol
Emulsifiers	Mix oil in water	Cetearyl alcohol, Cetyl alcohol, Ceteareth-20 Sodium lauroyl lactylate
Vehicles	Delivery	MVE traps ingredients into its oil or water layers and releases them slowly

Cerave technology and components

FORMULATIONS	ALL	MOST	LIMITED
	— Ingredients integral to formulation or benefit skin barrier	— Hyaluronic acid	— Parabens
	— Ceramides EOP, NP, AP	— MVE technology	— Sulfates
	— Fragrance-free	— Non-comedogenic	— Endocrine disruptors
	— Non-irritating; gentle on skin		— Dyes
	— Hypoallergenic		— Propylene glycol
			— Mineral, nut, coconut oils

MVE Technology



Ceramides

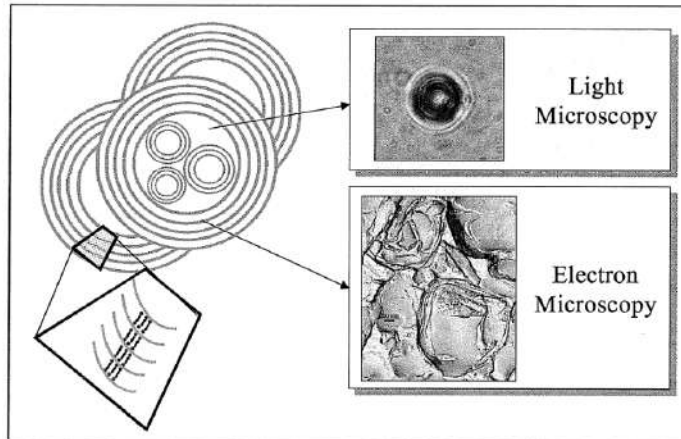


Cerave Multivesicular Emulsion System

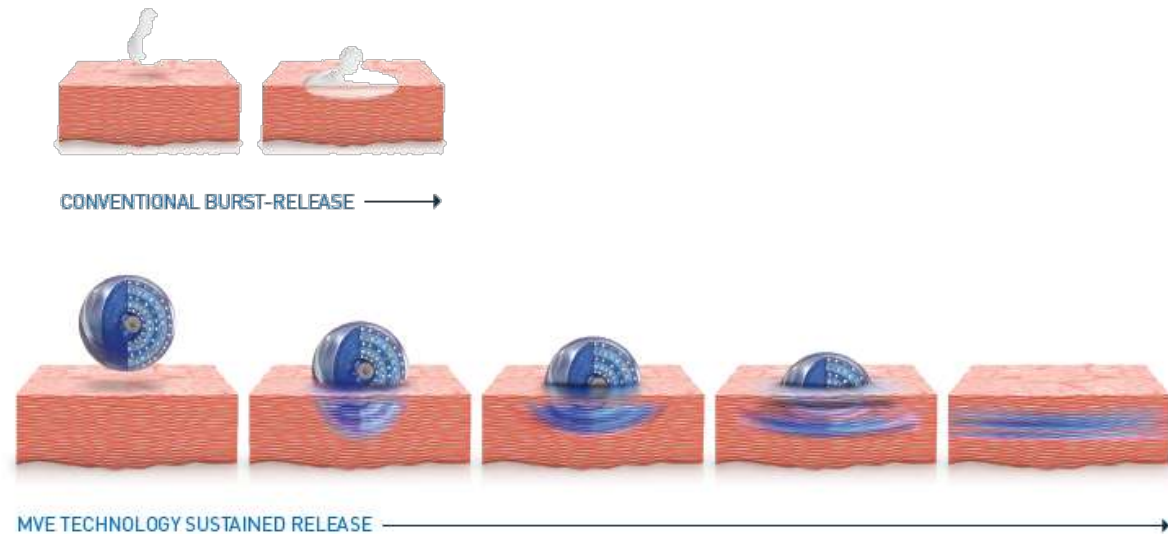
A patented MVE sustained release technology

MVE is a multi-phase, oil-in-water emulsion system consisting of a series of concentric spheres of oil and water phases

MVE traps ingredients into its oil or water layers and releases them slowly, layer by layer into the skin over time

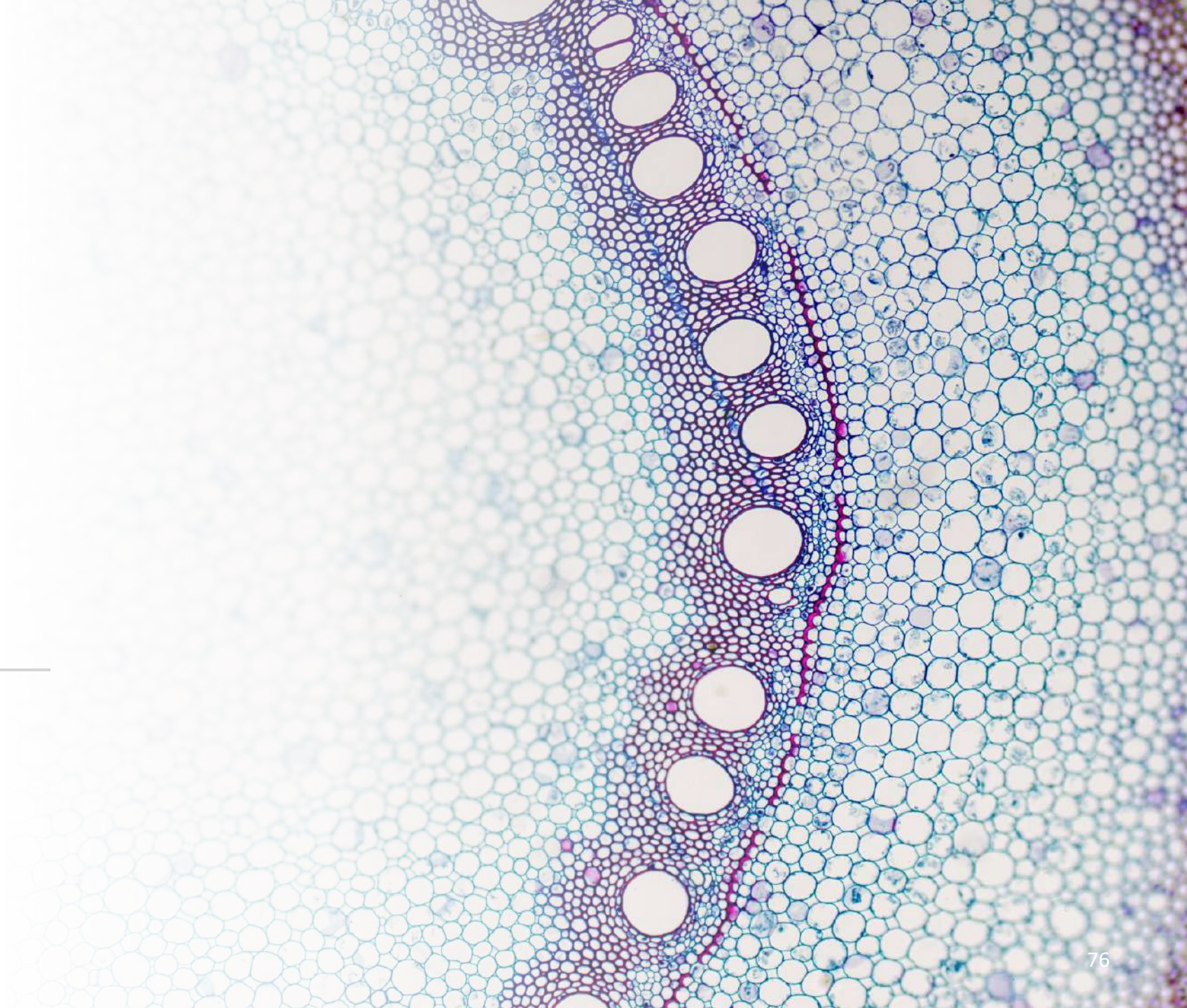


Progressive release of moisturizing ingredients vs 'quick-burst' of traditional emulsion





Sunscreen and acne



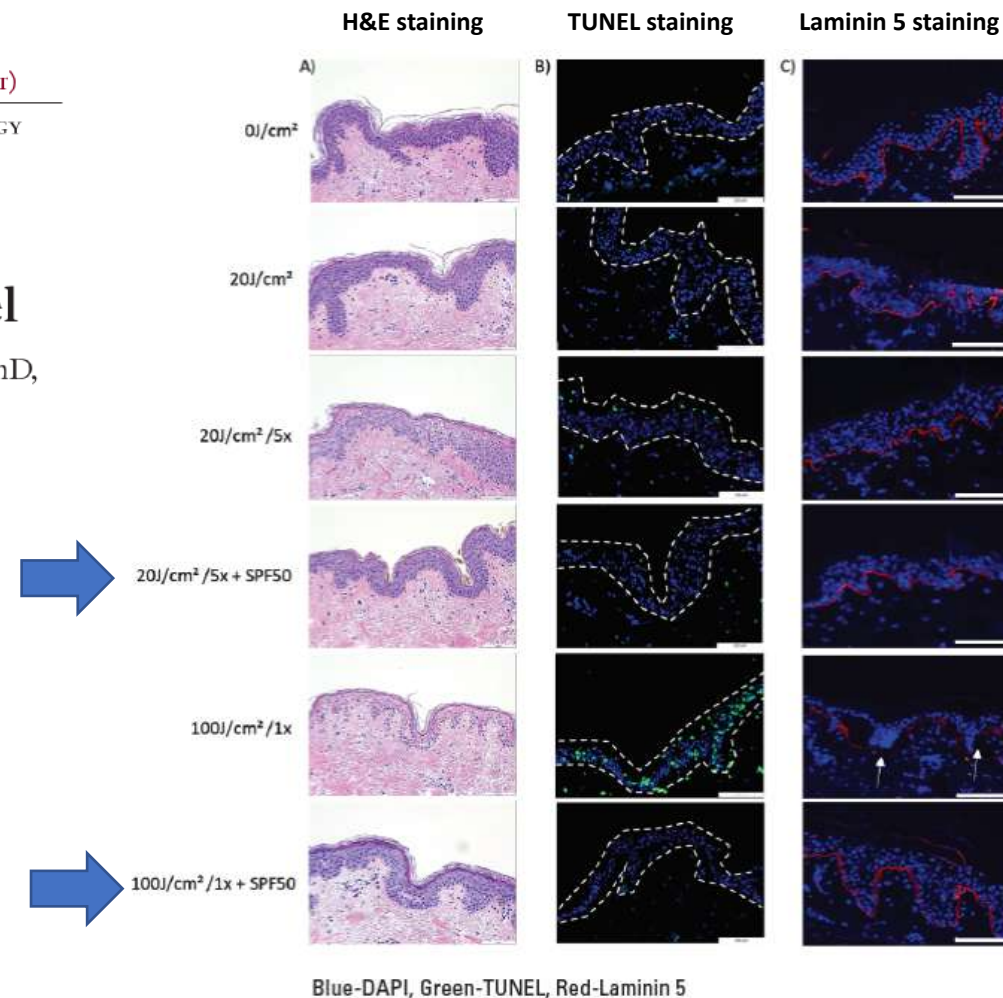
SOC acne patients benefit from sun protection

- Sun exposure is a contributory factor to PIH.
- Particularly in higher skin phototypes who may not normally wear sunscreen, and do not realize the darkening effects UV irradiation has on PIH.
- Counseling and education involves
 - Encouraging the daily use of a broad-spectrum sunscreen with an SPF of 30
 - Sun-protective measures: Sun avoidance and wearing protective clothing
 - Encourage the intake of foods rich in vitamin D: salmon, fish liver oils, and fortified foods; and vitamin D supplementation

Alteration to the Skin Barrier Integrity Following Broad-Spectrum UV Exposure in an Ex Vivo Tissue Model

Rebecca Barresi, Emily Chen, I-Chien Liao PhD, Xue Liu PhD, Nada Baalbaki PhD, Stephen Lynch PhD, Patricia Brieva PhD, Miao Wang, Qian Zheng MD PhD, Charbel Bouez PhD
L'Oréal Research and Innovation, Clark, NJ

The application of sunscreen prior to UV irradiation demonstrated a clear protective benefit in the 20J/cm²/5x and 100J/cm² conditions as illustrated by the preservation of tissue morphology in H&E staining, reduction in the number of apoptotic cells and minimized DEJ disruption



Representative images of H&E (A), TUNEL (B), and Laminin 5 (C) staining of ex vivo tissue following various UV energy exposure with/ without the application of sunscreen.

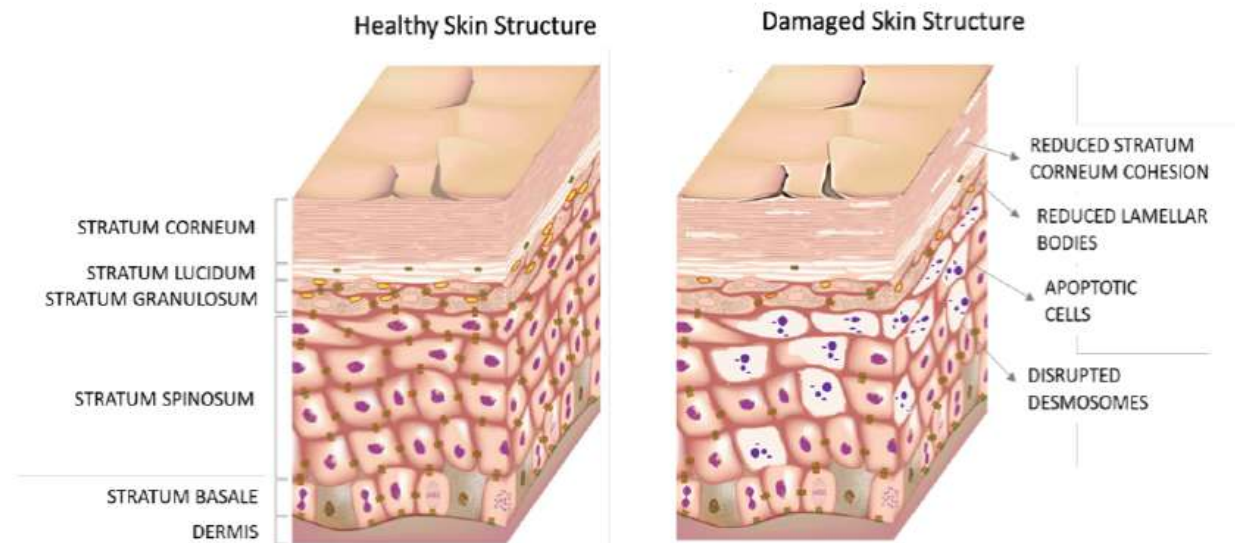
White arrows denote disruption of Laminin 5 expression following elevated UV exposure (100J/cm²).

Alteration to the Skin Barrier Integrity Following Broad-Spectrum UV Exposure in an Ex Vivo Tissue Model

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L'Oréal Research and Innovation, Clark, NJ

Prolonged sun exposure significantly impacted the inside-out skin barrier, referring to cell junctions that prevent loss of water, electrolytes, and proteins, while being less potent in altering the outside-in barrier.

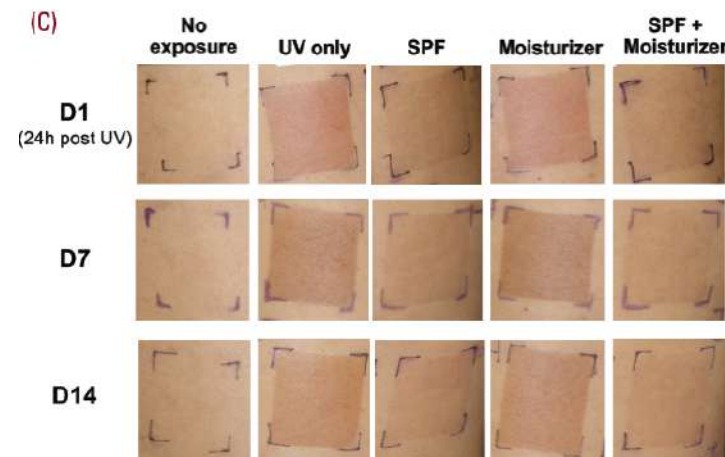
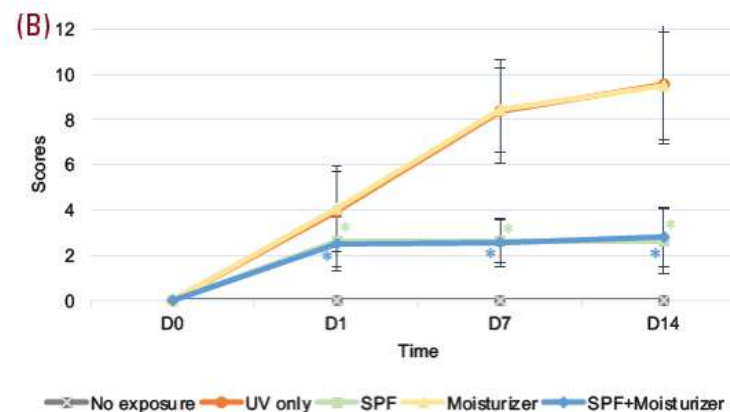
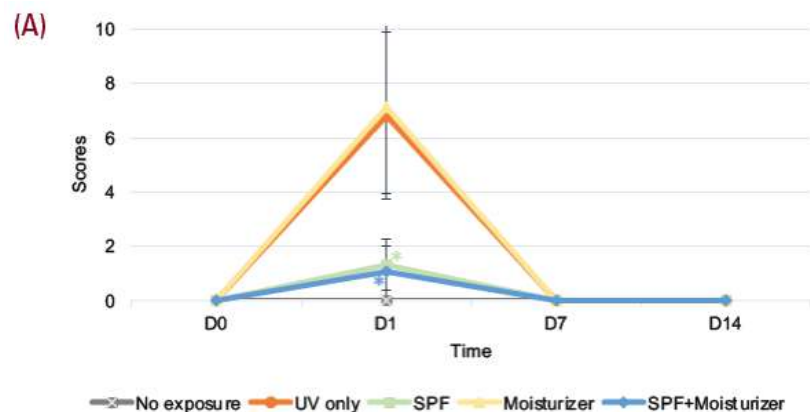
The relationship of prolonged UV exposure on the skin barrier



Efficacy of Ceramide-Containing Formulations on UV-Induced Skin Surface Barrier Alterations

Hawasatu Dumbuya PhD, Xi Yan MD PhD, Ying Chen PhD, Janet Wangari-Olivero PhD, Stephen Lynch PhD, Patricia Brieva PhD, Qian Zheng MD PhD, Charbel Bouez PhD
L'Oréal Research and Innovation, Clark, NJ

A ceramide-containing sunscreen and moisturizer routine protects against UV-induced skin surface barrier changes by preventing erythema and hyperpigmentation, improving skin hydration, and maintaining normal superficial skin cells morphology and turnover.



*denotes $P < .05$ vs UV only.

Sunscreen alone or in combination with moisturizer decrease UV-induced erythema and hyperpigmentation, while treatment with moisturizer alone was similar to UV only site.
(A) Clinical grading of erythema and (B) pigmentation scores for each condition following UV exposure. (C) Representative images of UV-induced erythema and pigmentation responses for each condition at indicated timepoints.

Conclusions

- Acne is a multifactorial, chronic skin disease that can lead to social, psychological, and physical consequences.
- Consider topical therapy for your acne patients due to their efficacy and minimal systemic side effects.
- Provide patients with the strategies to minimize side effects, which can help improve adherence.
- Patients are more likely to adhere to treatment if you educate them on acne and involve them in the process of selecting their topical treatment.

Conclusions, cont.

- Acne is associated with skin barrier dysfunction, which presents with a reduced water binding capacity due to multiple factors.
- Treatment can exacerbate this dysfunction, leading to dry skin and irritation, which in turn leads to poor treatment adherence and suboptimal outcomes.
- Maximize tolerability
- Align treatment end points with patient goals (including PIH resolution) and provide realistic timelines
- Initiate efficacious *combination* therapy early to minimize sequelae
- Identify potential exacerbating factors (some of which may be culturally influenced)
- pH-balanced and ceramide-containing cleansers and moisturizers may help maintain skin barrier function.



Questions?