

Topical Acne Therapies and Their Pathogenic Targets

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We, as dermatologists, are exceedingly lucky. We can watch our patients improve before our eyes. In clinical practice, we don't often track a quantitative metric to gauge success but rather measure the success of our treatment by the appearance of our patients' skin. For those suffering from acne, we know the improvement is more than skin-deep. As their skin improves, so does their self-confidence and quality of life. But how do we get our patients from point A to point B? How do we improve their skin? Our menu of oral and topical agents to choose from is expanding every year. As our options widen, we need to know which agent is the best, which will give our patients optimal results. But to fully appreciate this, we must have an understanding of each agent's mechanism of action and a knowledge of acne's pathophysiology.

Although we have a plethora of scientific studies looking at the pathogenesis of acne, more questions have arisen as the years have gone by. Aristotle said, "The more you know, the more you realize you don't." This is so true of our understanding of acne. Ten years ago, we didn't speak of *C. acnes* phylotypes or biofilms. Now, we are just beginning to realize the role that these entities may play in acne and yet more questions abound as to their impact on acne. The more we learn, the more questions arise. This exceedingly common disease has a tremendously complex pathogenesis. The different factors in acne interplay with one another making it impossible to say that one step always precedes or follows the other. Rather, there seems to be a complicated relationship between hyperkeratinization, *C. acnes*, sebum production, and inflammation that ultimately causes this ubiquitous disease.¹

As our patients often seek to find a safe approach to treating acne, many want to steer away from systemic treatments. Our topical options abound yet no single topical treatment addresses every step in acne pathogenesis. Many acne studies are monotherapy studies and do not evaluate different topical agents in combination simultaneously. It is often up to the clinician to use their clinical judgment as to which topical treatments should be combined in use. To understand how to choose the best topical treatment, or to understand which topical treatments can be used in combination to have an additive effect, rather than a redundant effect, a clinician must understand both the pathogenesis of acne and the mechanism of action of the various topical therapeutics. To watch our patients improve before our eyes, we need to understand what is going on below the skin. We need to know how to treat what we can't see – the sebum production, the inflammatory cascade, the hyperkeratinization, the *C. acnes*. Choosing the best therapeutic to address the complicated pathogenesis under the skin is key to bettering both our patients' skin and lives.

DISCLOSURE

Dr Graber has received honorarium and served as a consultant, speaker and researcher for several companies that make acne related products including: Almirall, Cutera, Galderma, La Roche Posay, L'Oreal, Ortho Dermatologics and WoltersKluwer Health; also a Cutera shareholder.

REFERENCES

1. Goh C, Cheng C, Agak G, et al. *Fitzpatrick's Dermatology*. McGraw-Hill Companies, Inc; 2019.