

Characterizing Consumer-Reported Skin Reactions to Microspicule-Containing Skincare Products via TikTok Content Analysis

Authors: *Aaron Wang,¹ Thu Anh Ly,² Nicole Case,¹ Sandy Zhang,³ Laavanya Joshi Malik,¹ Parker Juels,¹ Victoria Asuquo,⁴ Robert Dellavalle,⁵ Cory A. Dunnick⁶

1. University of Colorado School of Medicine, Aurora, USA
2. Rocky Vista University School of Osteopathic Medicine, Centennial, Colorado, USA
3. University of Minnesota Medical School, Minneapolis, USA
4. Morehouse School of Medicine, Atlanta, Georgia, USA
5. Department of Dermatology, University of Minnesota Medical School, Minneapolis, USA
6. Dermatology Service, Rocky Mountain Regional VAMC, Aurora, Colorado, USA

*Correspondence to aaron.wang@cuanschutz.edu

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BACKGROUND AND AIMS

Microspicule technology refers to the use of sharp, rod- or pyramid-shaped microneedle-like structures, typically composed of siliceous sponge spicules (e.g., from *Haliclona* or *Spongilla* species) or biodegradable materials such as hyaluronic acid, that mechanically disrupt the stratum corneum and facilitate transdermal delivery of hydrophilic or macromolecular compounds.¹⁻⁷

These structures, approximately 100–250 μm in length and 7–12 μm in diameter, can create hundreds to thousands of microchannels per mm^2 in the skin through simple mechanical application. Increasingly incorporated into creams, ampules, or patches, these systems are marketed for cosmetic and dermatologic indications such as anti-aging/wrinkle reduction, hyperpigmentation, hydration, and scar reduction.¹⁻⁷ Although microspicules have been promoted for cosmetic benefits, safety data remain limited.¹⁻⁷ This study aims to characterize how microspicule-based products are portrayed on TikTok.

MATERIALS AND METHODS

TikTok videos related to microspicule products posted within the last 6 months were evaluated. Of 461 identified videos, 272 were included. Video data were processed using Python libraries and statistical comparisons were conducted with χ^2 tests. Outcomes were coded for product type, user-reported reactions, sponsorship, and sentiment.

RESULTS

Tingling/stinging was most frequently reported (23.7%), often framed as desirable. Other adverse reactions including redness, burning, prickliness, and breakouts were rare (<2%). Reactions were reported in 84 of 272 videos (30.9%); reaction status was unclear in 181 (66.5%), and 7 (2.6%) explicitly reported none. Unclear means reactions were not discussed or could not be determined; it is not evidence of no reaction. Among users who noted visible improvement, 93% encouraged continued use. Commercial relationships appeared in 191 of 272 videos (70.2%). Reaction

reporting was not significantly associated with commercial status (χ^2 , $p=0.953$). Commercial relationships included sponsorship, gifted products, affiliate partnerships, or store/clinic representation.

CONCLUSION

Microspicules are a novel delivery system. Overall, they appear to be well tolerated in skincare products, with the minority of videos noting irritant reactions. Future studies should evaluate the efficacy of the cosmetic claims of the products. This study highlights social media's influence on perceptions of emerging skincare technologies and emphasizes the need for dermatologists to counsel patients on both benefits and potential risks of microspicule-based products.

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