

Thesis Title	The Peeling Effect of Topical 15% Tranexamic Acid in Inflammatory Acne Treatment
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ABSTRACT

Objective: To evaluate the efficacy of a 15% tranexamic acid (TXA) emulgel in inducing skin peeling, treating acne, and reducing periorbital wrinkles. Additionally, to assess its impact on transepidermal water loss (TEWL), sebum level, stratum corneum integrity, and submental TEWL. Finally, to evaluate the side effects and satisfaction associated with the treatment.

Methods: A randomized, double-blind, placebo-controlled, split-face study was conducted on 15 participants with mild to moderate acne. Participants applied a 15% TXA emulgel to one side of the face and a placebo to the other, twice daily for the first four weeks. For the subsequent four weeks, they switched to applying the placebo on both sides of the face. All parameters were assessed at baseline, and weeks 1, 2, 3, 4, and 8. The collection of the stratum corneum was conducted at baseline and week 4.

Results: The 15% TXA significantly increased the desquamation index starting from week 3 ($p=0.035$) onward, accompanied by a significant elevation in TEWL starting from week 3 ($p=0.013$) and a decrease in sebum level starting from week 2 ($p=0.039$) compared to the placebo group. In terms of stratum corneum quantification,

more layers were collected via the tape-stripping procedure at week 4 (48.35 ± 13.66) on the TXA side compared to the placebo side (44.51 ± 9.47) during the same week, and to its baseline (46.49 ± 15.14). Despite these observations, no significant differences were found between or within the groups. Submental TEWL after stratum corneum removal by the tapes showed a significant difference between baseline and week 4 ($p=0.027$) in the TXA group. In terms of acne treatment, statistically significant differences were observed in both total inflammatory and total non-inflammatory acne lesion counts between the 15% TXA group and the placebo group, commencing from week 2 ($p=0.005$) for the total inflammatory acne and week 3 ($p=0.047$) onward for the total non-inflammatory acne. A significant reduction in erythema of inflammatory papules was noted in the TXA group, evident from week 2 ($p=0.019$), compared to the placebo group. Furthermore, the TXA group exhibited a significant improvement in periorbital fine lines, with a significant reduction in the mean wrinkle score between baseline and week 1 ($p=0.020$). Regarding safety, out of 15 participants, seven subjects experienced mild erythema during weeks 2 through week 4, and five subjects reported mild itching on the TXA-treated sides. These side effects were perceived as minimal and tolerable, resolving spontaneously. Participants expressed satisfaction with the acne treatment and rejuvenation effects attributed to the desquamative properties of the 15% TXA formulation.

Conclusion: The findings suggest that the 15% TXA emulgel is a promising option for acne treatment and skin rejuvenation.

Keywords: Acne Vulgaris, Tranexamic Acid (TXA), Anti-inflammatory Effect, Desquamation, Transepidermal Water Loss (TEWL), Sebum, Protein Assay, Periorbital Wrinkle