A Comparative Clinical Demonstration of the Spreadability of Tazarotene Lotion 0.045% versus Trifarotene Cream 0.005%

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SYNOPSIS

- The ability of a topical medication to spread is an important parameter, since the thinnest layer of medication contacting the skin is physiologically active.
- A thinner film is just as effective as a thicker film from an efficacy standpoint, but a thinner film will spread farther—exhibiting superior spreadability and increasing the number of applications while decreasing the cost per application.
- From a rheological perspective, products exhibiting low yield stress and lower intrinsic viscosity will have better spreadability and require less effort to spread at the surface of the skin\(^1,2\).
- Viscosity describes a fluid's resistance to flow (eg, the “thickness” of a fluid).
- Yield stress is the minimum force required to make a structured fluid flow.
- Spreadability of Tazarotene 0.045% Lotion

OBJECTIVE

- To compare the spreadability of two topical formulations: tazarotene 0.045% polymeric emulsion lotion versus trifarotene 0.005% cream.
- To relate the rheological profile of topical products to their spreadability.

METHODS

- This double-blind, split-body study enrolled male or female adults ≥18 years of age with normal back skin.
- Participants, who provided written informed consent, were assessed for limited back hair which would prevent application of the study products.
- Tazarotene 0.045% lotion was applied to one randomized half of the back, and trifarotene 0.005% cream was applied to the opposite randomized half of the back. (Figure 1).
- The back was divided at the vertebral column into right and left halves. Drugs were randomized for right or left application; however, the left back product was always pigmented blue and the right back product was always pigmented green. One toothpick tip of blue or green food-coloring gel was used to pigment the drugs.
- The blinded dermatologist investigator was presented with 0.1 cc (0.1 mL) of each of the drugs for application by the unblinded coordinator.
- Two 10 cm wide application areas were marked with a gentian violet marker, one on each side of the back; this mark defined the lateral bounds over which the lotion or cream were spread.
- The investigator applied the products with a gloved hand to obtain an even film, moving study product down the back until it would no longer spread.
- The lower extent of the study product application was marked with a gentian violet marker and measured in centimeters.
- A two-tailed Student’s t-test was used to assess the spreadability data.

RESULTS

- A total of 30 participants were included in the study.
- Participants ranged from 18 to 59 years of age; 26 (87%) were female.
- Tazarotene 0.045% lotion spread over an average area measuring 10 cm x 16.70 cm (167.0 cm\(^2\)) while the trifarotene 0.005% cream spread over an average area measuring 10 cm x 13.03 cm (130.3 cm\(^2\)) (P<0.001; Figure 2).
- No adverse reactions or adverse events occurred during the conduct of the study.

FIGURE 2. Mean Spreadability of Tazarotene 0.045% Lotion and Trifarotene 0.005% Cream (N=30)

CONCLUSIONS

- The tazarotene 0.045% lotion spread on average 36.7 square centimeters farther than the trifarotene 0.005% cream.
- These results are supported by the differences in the rheological profiles of the two products, in which tazarotene lotion exhibits lower yield stress and lower intrinsic viscosity versus trifarotene cream\(^3\).

REFERENCES


AUTHOR DISCLOSURES

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