

Skin Hydration and Cooling Properties of the Voltaren[®] Vehicle Gel

Agnes M. Hug^{a*}, Thomas Schmidts^b, Jens Kuhlmann^b, Dörte Segger^c, Grigorios Fotopoulos^d, Johanna Heinzerling^a

^a Novartis Consumer Health GmbH, Zielstattstrasse 40, D-81379 Munich, Germany

^b RSC Pharma LTD. & Co. KG, Gleiberging 23, D-35396 Giessen, Germany

^c SIT, Skin Investigation and Technology Hamburg GmbH, Dammtorwall 4, D-20354 Hamburg, Germany

^d Novartis Consumer Health, Rue de l'Etraz, CH-1260, Switzerland

BACKGROUND

Voltaren vehicle gel is the carrier base of the topical Voltaren products. It is an emulgel formulation which is easily applied on the skin, while providing some sensory benefits.

OBJECTIVES

The aim of the study was to assess the hydrating and cooling effect of Voltaren vehicle gel.

METHODS

Study 1: Randomized, investigator-blind study in 31 healthy, female volunteers:

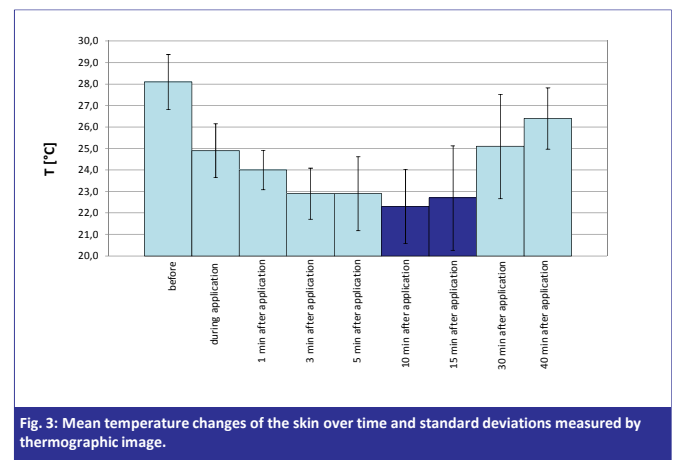
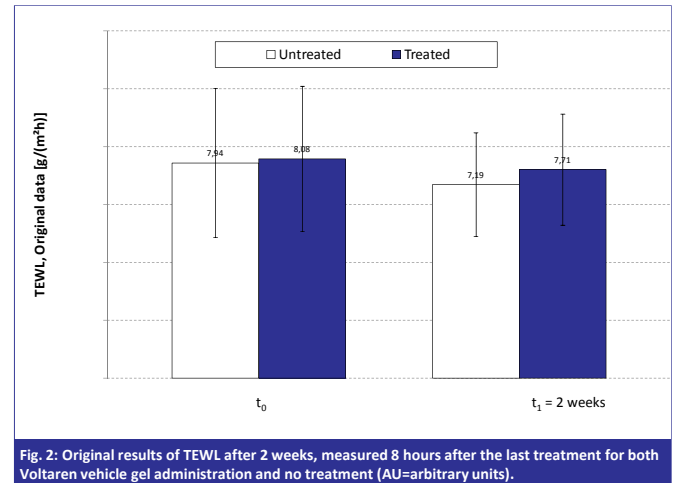
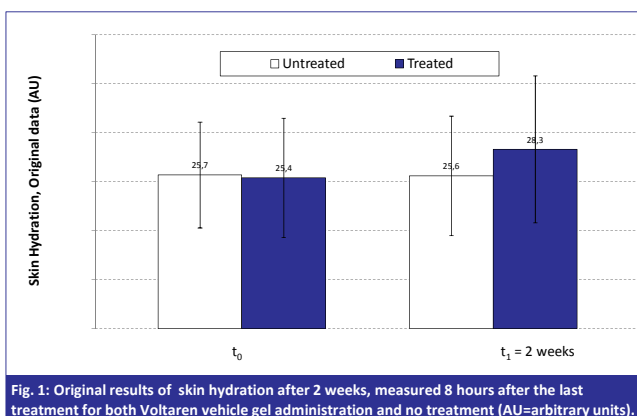
- Skin hydration and transepidermal water loss (TEWL) were measured, using Corneometer CM825[®] and DermaLab[®] respectively, on inner forearms 8 h after final application.
- 2 mg/cm² Voltaren vehicle gel was applied 3 times per day for 2 weeks.

Study 2: Open, uncontrolled, non-randomized, single-dose design in 6 healthy subjects (3 female and 3 male):

- Cooling effect was evaluated for 40 minutes with thermal imaging infrared camera (FLIR ThermoCam B4) on forearms.
- Participants subjectively evaluated the sensory and cooling properties in two independent questionnaires.

RESULTS

- Voltaren vehicle gel administration produced a statistically significant increase (13.1%) in skin hydration to 28.3 ± 7.5 arbitrary units ($p=0.0002$ vs. the untreated site). (Fig. 1).
- TEWL decreased on both, treated (0.37 gm⁻²h⁻¹) and untreated (0.74 gm⁻²h⁻¹) forearm sites, demonstrating a relative increase of 6.5% in water loss after treatment (Fig. 2).
- Voltaren vehicle gel application resulted in a rapid reduction of skin surface temperature by 5.1°C after only 3 min with an average maximum reduction of 5.8°C after 10 min and a maximum decrease of 7.1°C (Fig. 3).
- 94% of the subjects felt a cooling effect, while 74% felt that their skin became softer after Voltaren vehicle gel application.
- No adverse events, including skin irritation, were reported during the study.



CONCLUSIONS

- Voltaren vehicle gel provided a rapid, but also relatively lasting (approximately 30 min), cooling effect upon application.
- Voltaren vehicle gel application induced a statistically significant increase in skin hydration.
- Vast majority of users verified that they subjectively experienced the cooling effect and felt their skin became softer and smoother after application.
- The small relative increase in water loss may be attributed to an additional skin surface water loss secondary to the increased water content brought into the skin by the Voltaren vehicle gel.
- The use did not result in any skin irritation.