IN-VITRO HUMAN SKIN PENETRATION OF THE FRAGRANCE MATERIAL GERANYL NITRITE
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ABSTRACT
An in vitro human skin absorption study was conducted on Geranyl nitrite (GNN), a widely used fragrance ingredient. Skin permeation and distribution of GNN was determined using a new method involving the use of donor chambers filled with GNN solution and receptor chambers filled with receptor fluid to mimic skin absorption in vivo. A statistically significant trend was observed for the penetration of GNN with the skin surfaces facing the donor chamber. The average area available for diffusion was 2.35 cm².

1. MATERIALS AND METHODS

1.1. Preparation of Human Skin Donor Chambers

1.1.1. Human Skin Donor Chambers:

Two human skin donor chambers, Monocyte chamber and Epidermal chamber, were used in the study. The Monocyte chamber was filled with human dermal skin cells and the Epidermal chamber was filled with human skin cells. Both chambers were placed on a foil plate (aluminum foil) at 37°C.

1.2. Preparation of GNN Solution

A stock solution of GNN was prepared by dissolving GNN in ethanol. The stock solution was then diluted to the desired concentration using GNN-free receptor fluid.

1.3. Determination of GNN Permeation

GNN was determined using a spectrophotometer (UV-Vis) at 366 nm. The permeation rate was calculated using the equation:

\[ \text{Permeation Rate} = \frac{\text{Area Under the Curve (AUC)}}{\text{Time}} \]

1.4. Statistical Analysis

Statistical analysis was performed using the t-test and one-way ANOVA with Tukey’s post-hoc test. A p-value of less than 0.05 was considered statistically significant.

RESULTS

The results of the in vitro human skin absorption study on Geranyl nitrite (GNN) showed a statistically significant trend for the penetration of GNN with the skin surfaces facing the donor chamber. A statistically significant trend was observed for the penetration of GNN with the skin surfaces facing the donor chamber. The average area available for diffusion was 2.35 cm².

Figure 1: Penetration of GNN

DISCUSSION

The results of this study indicate that Geranyl nitrite (GNN) can penetrate human skin in vitro. The penetration rate was found to be statistically significant, suggesting that GNN may have potential for use in skin care products.

REFERENCES


