

The efficiency of humectants as skin moisturizers in the presence of oil.

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Abstract

BACKGROUND/AIMS:

The research on the treatment of "dry skin syndrome" is hampered by the lack of a suitable animal model. Formerly, we developed a validated guinea pig *in vivo* model in which the dry skin syndrome persists at least for 1 week. We can, therefore, compare the pharmacological effectiveness of known and potential moisturizers for the treatment of dry skin syndrome. Our aim is to study whether the moisturizing efficiency of humectants depends on the solvents in which they are dissolved.

METHODS:

"Dry skin syndrome" was induced on the shaved skin on one side of guinea pigs by daily application of 2% sodium lauryl sulphate in deionized water (SLS) for 3 days. The other shaved side was used as control. After ascertaining skin dryness, that side was treated for 6 days with glycerol or 1,2-hexanediol in different solvents: water, or medium chain triglycerides (MCT) or mixtures of MCT with isopropyl alcohol in different proportions. Measurement of the *in vivo* moisturizing effect was carried out by a Comeometer CM 825; erythema was measured by a Mexameter MX 16.

RESULTS:

Treatments with glycerol (1M) in water reversed the skin dryness shown by both instruments. When dissolving glycerol in MCT, no moisturizing effect was found, probably because glycerol does not dissolve in the oil. No moisturizing effect was found with different combinations of glycerol in the mixtures of MCT and isopropyl alcohol. No moisturizing effect was found using another polyol moisturizer: 1,2 hexanediol (1M) dissolved in MCT oil. Glycerol or 1,2-hexanediol abolished the erythema only when they were dissolved in water alone.

CONCLUSION:

Polyol moisturizers such as glycerol or 1,2-hexanediol do not act in the presence of oils against the sodium lauryl sulphate-induced dry skin in our guinea pig model. Since in an oil-in-water (O/W) emulsion, the water evaporates within several minutes, one has to question the ability of moisturizing emulsions to treat dry skin. In such instances, one cannot draw conclusions about the moisturizing efficiency of the preparation merely from the presence of the humectant. One has to study the effect of the finished preparation.