

# The effect of glycerol and xylitol on skin hydration, barrier function and morphology

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**BACKGROUND:** Glycerol and xylitol are known to:  
- hydrate the skin  
- improve barrier function | in a short period  
However, their long term effect on skin morphology and physiology is still unknown

**AIMS:** to test the effects of glycerol and xylitol on:  
- hydration  
- barrier function  
- biomechanical properties and  
- morphology of the skin

**MATERIALS & METHODS:**

- 12 healthy volunteers (age: 50-60 years)
- dry skin (baseline hydration ≤25 AU on forearm)
- treatments on the lateral forearm (3 square-shaped area)
- observation period: 14 days (treatments twice a day)
- measurements: on day 14

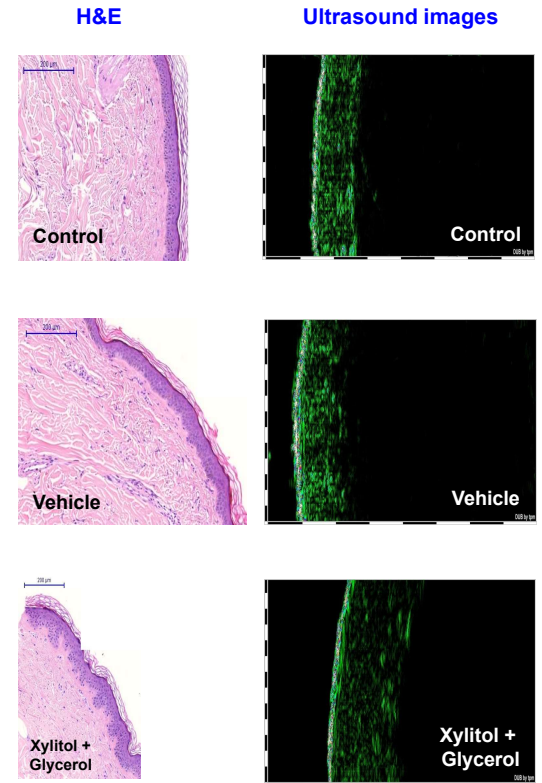
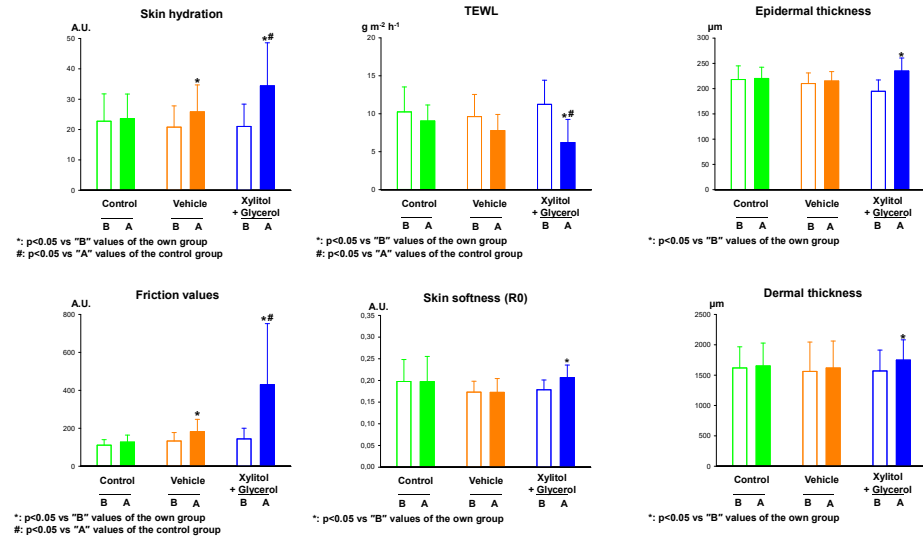
**Treatments:**

- Control: no treatment
- Vehicle: Carbopol Ultraz 10 (0.4%)
- Xylitol + Glycerol (5-5%)

**Measurements:**

- Skin hydration (Corneometer CM 825)
- Transepidermal water loss (TEWL) (Tewameter TM 300)
- Friction values (Frictiometer FR 700)
- Skin softness (Cutometer MPA 580)
- Ultrasound imaging (SkinScanner DUB-USB): epidermal and dermal thickness, echogenicity of the papillar dermis
- Biopsies for histological evaluation after hematoxylin-eosin (H&E) staining (interdigitation index)

**RESULTS:**



**SUMMARY:**

Parameter	Effect of xylitol + glycerol
Skin hydration	↑
TEWL	↓
Friction values	↑
Skin softness	↑
Epidermal and dermal thickness	↑
Echogenicity	↑
Interdigitation index	↑

Exposure to the vehicle resulted in mild skin hydrating effect

No change was detected in the studied parameters on the control area

**CONCLUSION:**

- Xylitol and glycerol:
- hydrates the skin
  - improves the barrier function
  - ameliorate some mechanical properties
  - contributes to skin rejuvenation

Joint application of these polyols can thus be a useful additional therapy for dry skin

#: p<0.05 vs control group