

DEVELOPMENT OF A NEW SKIN HEALING PRODUCT BASED ON AN ECOBIOLOGICAL APPROACH

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BACKGROUND

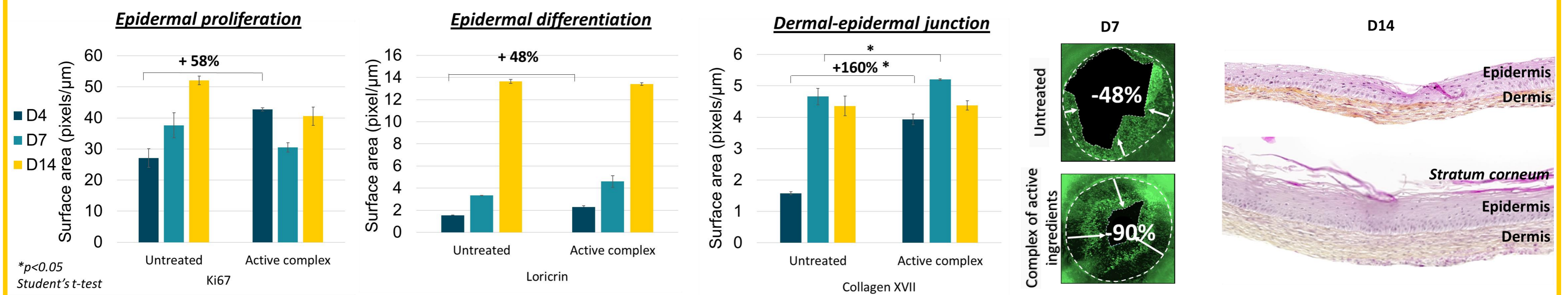
During wound healing, a repairing cream can help to facilitate closure, reduce pain, tightness, burning and associated itching, and prevent the development of secondary pigmentation. In this context, various studies were carried out to assess the healing effect of a new dermocosmetic product based on the ecobiological approach, which considers the skin as a living ecosystem that interacts with its internal and external environment and whose natural biology must be protected.

METHODS

- In vitro study:** assessment of the efficacy of a new patented* complex of active ingredients (polyglutamic acid, hyaluronic acid, xylose) using a new 3D model for studying wound healing, equivalent to bilayers of human skin (keratinocytes/fibroblasts). A 3 mm "wound" was induced with a punch extending deep down to the dermis. The complex of active ingredients was then applied to the wound for 14 days, with histological and immunohistological analyses on D4, D7 and D14. (*patent application filed)
- Transepidermal water loss (TEWL) and partial pressure:** assessment of the effect of the product containing the complex of active ingredients on the epidermal "skin barrier" function by studying transepidermal water loss (TEWL) on 10 healthy subjects using a Tewameter TMHex® and by measuring transcutaneous O₂ and CO₂ partial pressure on 21 subjects using a TCM5 radiometer fitted with a combined oxygen/carbon dioxide sensor (TC Sensor 84).
- Study of the skin microbiome:** metagenomic analysis via 16S rRNA gene sequencing of the skin microbiome of 20 subjects. Before and after disinfection with ethanol, the product was applied, with a control area free of any product.
- Split-face comparative clinical study:** assessment of the tolerance and efficacy of the product (application twice daily for 14 days vs placebo) after peel (glycolic acid 70%) on 22 subjects aged 36 years on average, with an overall score based on 3 sub-scores from 0 to 4 (inflammation, scar appearance, functional signs), combined with an evaluation of pH and photographs.

RESULTS

In vitro 3D study: improvement of closure and repair within 4 days



TEWL and partial pressures: skin barrier preservation

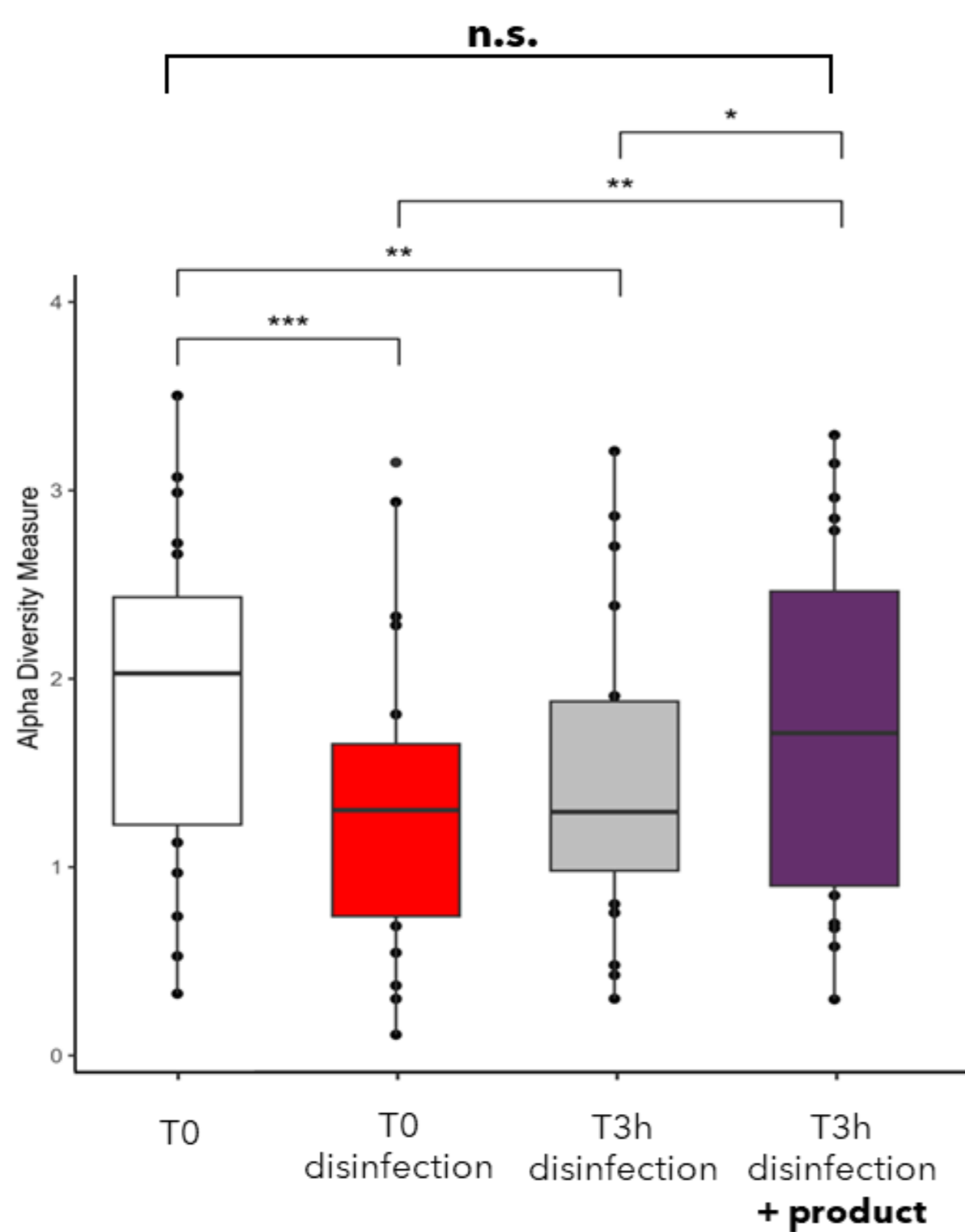
For all 10 subjects, a **significant improvement in TEWL** compared with the untreated area demonstrated the effect of the product on the epidermal "barrier function" after applying blotting paper (-20.9%; $p < 0.001$) and after rubbing to alter the skin barrier (-11.7%; $p < 0.001$).

The **absence of any change in O₂ and CO₂ partial pressures** demonstrated the preservation of the skin's ability to breathe in the presence of the product.

Skin microbiome: cutaneous microbial diversity restoration

The results on the Shannon index **showed restoration of diversity to the cutaneous microbiome**, which is essential for protecting the skin (recruitment of immune cells, production of antimicrobial peptides, inhibition of biofilm formation) and controlling skin inflammation. This effect was noted as early as 3 hours after disinfection, whereas loss of microbiome diversity persisted in the untreated area (no significant difference in the Shannon index).

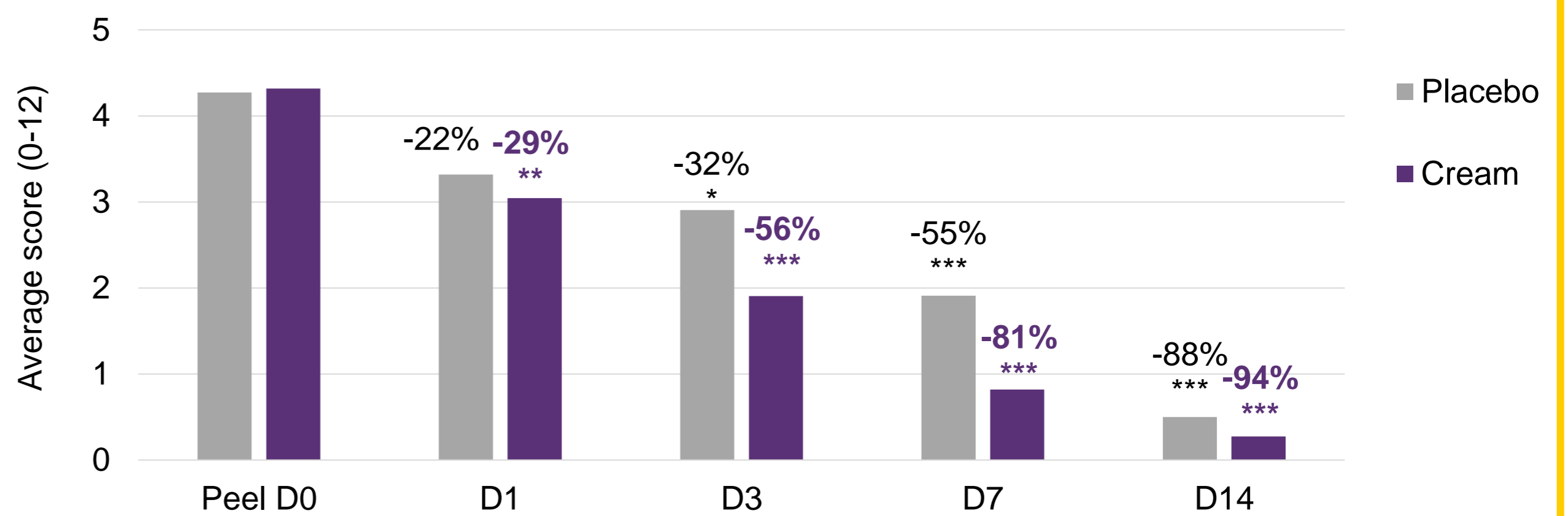
Shannon index



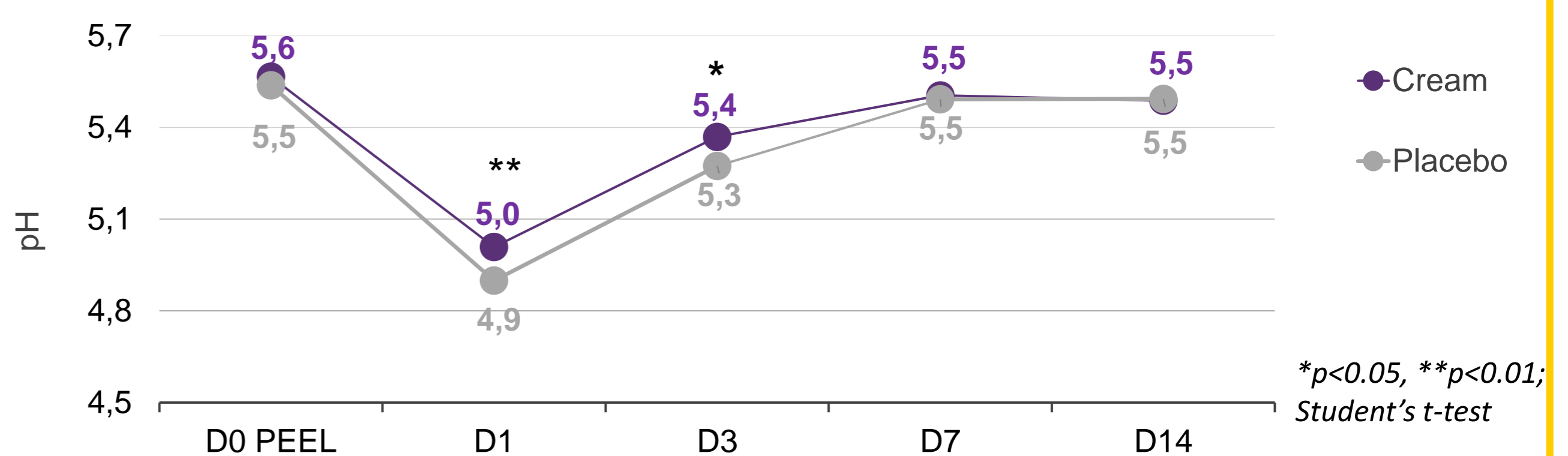
Thanks to its ultra-moisturising ecobiological formula, the product helps to **recreate an environment that is conducive to restoring diversity to the cutaneous microbiome**: high quantity of **biomimetic ingredients** (80%) including squalane and maintenance of an **acidic physiological skin pH**.

Post-peeling split-face clinical study: improvement of wound healing from day 1

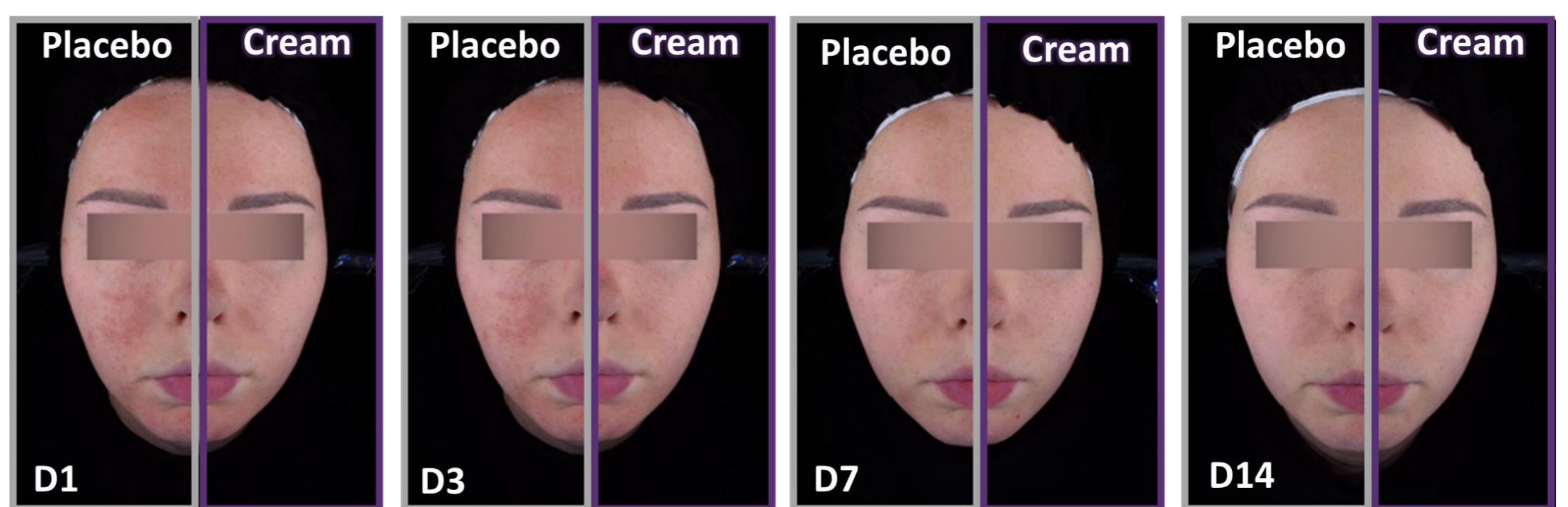
Decrease in the overall healing score with the cream vs the placebo



A more physiological pH with the cream vs the placebo



Improvement of the clinical signs with the cream vs the placebo



In addition to showing **significant immediate soothing efficacy** compared with the placebo (-43% vs 0% reduction in burning sensations immediately after a single application vs D0 post-peel, $p < 0.01$, Wilcoxon test), the **product was very well tolerated**.

CONCLUSION

This new skin-healing product, designed using an ecobiological approach, demonstrates significant activity on the skin's natural repair processes while respecting the skin's ecosystem and restoring the diversity of the microbiome for mark, and pain-free healing.