INTEREST OF NEW HEALING SPF50+ PHOTOPROTECTOR TO PREVENT POST-INFLAMMATORY HYPERPIGMENTATION USING AN ECOBIOLOGICAL APPROACH

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BACKGROUND

A photoprotection product is often used after certain aesthetic procedures, particularly to prevent post-inflammatory hyperpigmentation (PIH). The aim of the studies carried out was to develop a new repairing SPF50+ photoprotection product, formulated based on the ecobiological approach, which considers the skin as a living ecosystem interfacing with its internal and external environment and preserves its natural biology.

METHODS

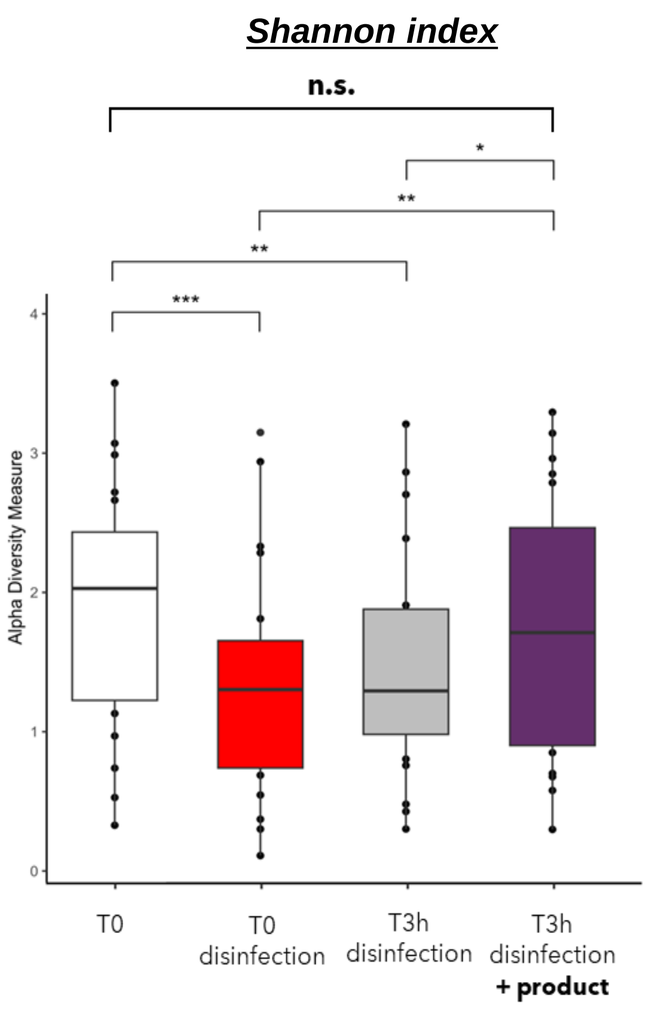
- **Study of the skin microbiome**: metagenomic analysis via 16S rRNA gene sequencing of the skin microbiomes of 20 subjects. Before and after disinfection with ethanol, the product was applied, with a control area free of any product.
- **Transepidermal water loss (TEWL) and partial pressures**: assessment 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 O_2 and CO_2 partial pressures on 21 subjects using a TCM5 radiometer fitted with a combined oxygen/carbon dioxide sensor (TC Sensor 84).
- **Post-act clinical study**: assessment of the tolerance and efficacy of the photoprotection product (used twice a day for 14 days) following a Intense Pulsed Light (IPL) procedure on 31 subjects with an average age of 28 years and with persistent pigmented spots, with an overall score composed of 3 sub-scores from 0 to 4 (inflammation, scar appearance, functional signs) in addition to instrumental evaluations (TEWL, Visia®).

RESULTS

Skin microbiome: cutaneous microbial diversity restoration

The results on 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



*n.s: not significant; *p<0.05, **p<0.01; ***p<0.001 (Wilcoxon test)*

Thanks to its ultra-moisturising ecobiological formula, the photoprotection 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**.

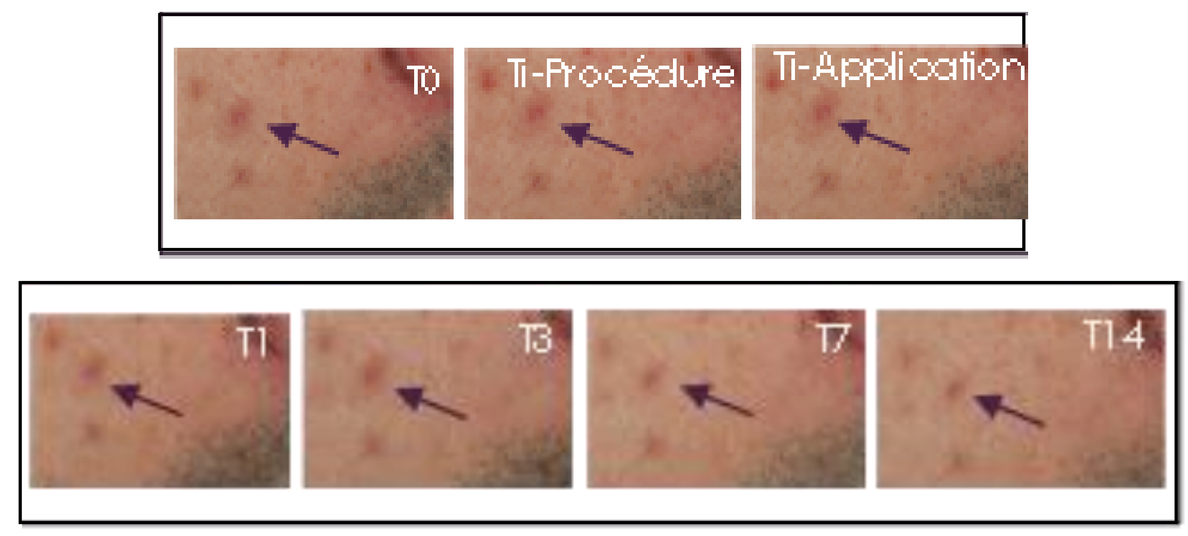
TEWL and partial pressures: skin barrier protection

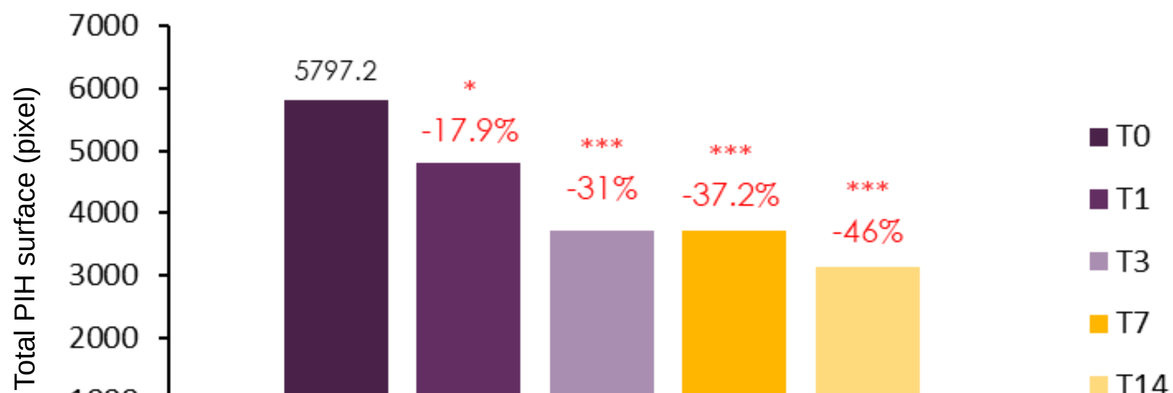
A significant improvement in TEWL compared with the untreated area demonstrated the effect of the photoprotection product on "barrier function" after applying blotting paper (-21.4%; p<0.001) and after rubbing to alter the barrier (-7.8%; p<0.01).

The absence of any change in O_2 and CO_2 partial pressure demonstrated the preservation of the skin's ability to breathe in the presence of the product.

Post-laser clinical study: PIH prevention and reduction

No new PIH lesions and a reduction in pre-existing lesions (PIH surface and homogeneity)

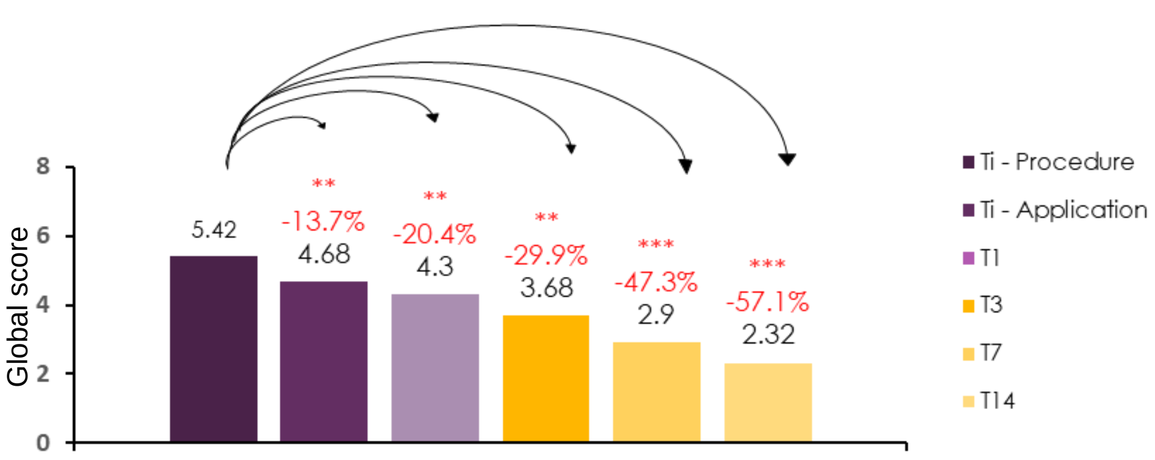




p<0.05, **p<0.01;*p<0.001 (Wilcoxon test)*

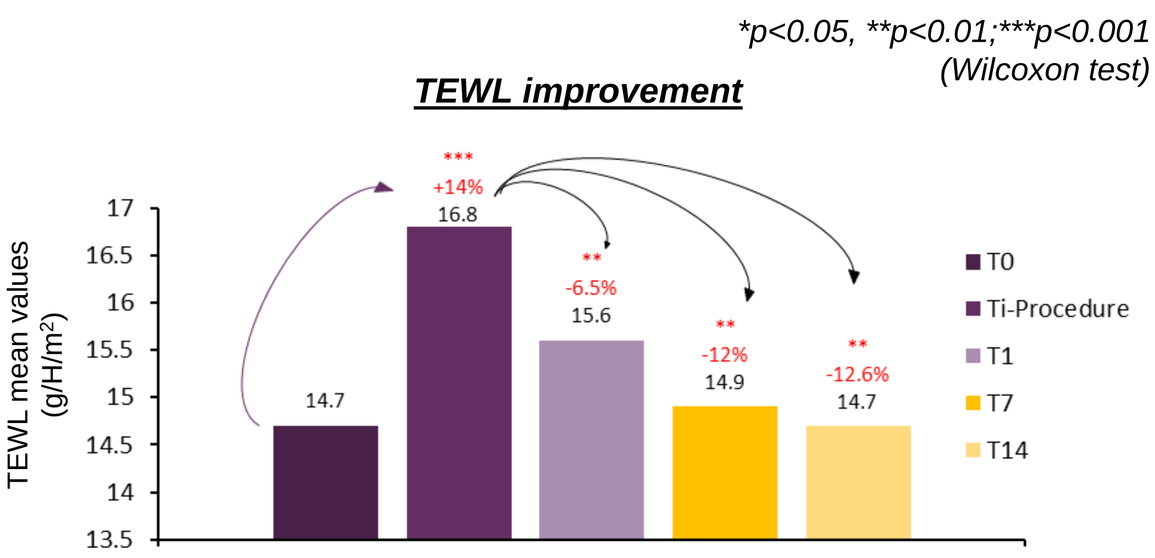
Post-laser clinical study: wound healing improvement

***Decrease in the overall healing score* with the product**

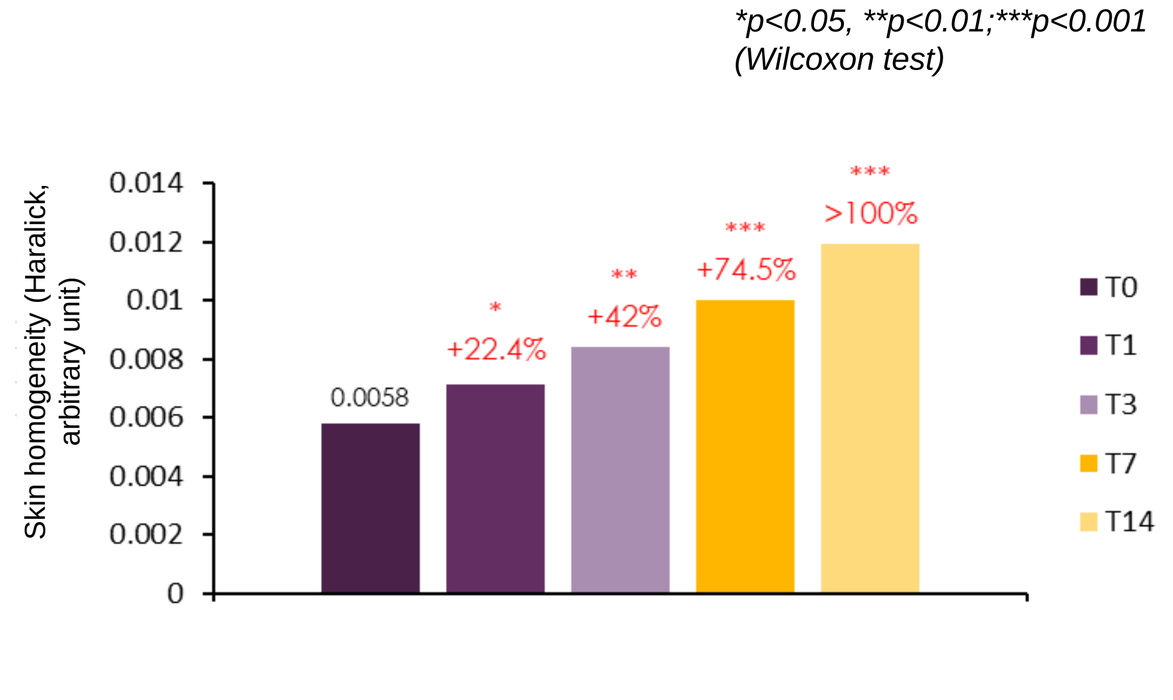


p<0.05, **p<0.01;*p<0.001 (Wilcoxon test)*

TEWL improvement



In addition to showing **significant immediate soothing efficacy** with a reduction in redness (p<0.001) and burning sensations (p<0.05), the **photoprotection product was very well tolerated**.



These results confirmed the investigator's assessment of the PIH parameter (significant decreases of -12.8% and -21.8% respectively at T7, T14 vs T0; p<0.01).

CONCLUSION

This healing SPF50+ photoprotective product, designed using an ecobiological approach, promotes the natural healing process while protecting against UV rays; it respects the skin's ecosystem, in particular by restoring its microbiome, for optimal healing without hyperpigmentation.