Focus on triggering factors in sensitive skin: two biomarkers in a new heat-cold stress *in vivo* model

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INTRODUCTION

Sensitive skin syndrome (SSS) is characterized by barrier function alteration and inflammation in response to several stimuli (mechanical, chemical, thermal, pollution…) but no consensus exists on how to assess Sensitive skin syndrome.

In this context, we developed an innovative model with heat-cold stress to evaluate in subjects with SSS the impact of a dermocosmetic product on two biomarkers, IL-1α and S100A8/9.

MATERIAL & METHODS

To confirm its efficacy, the product was evaluated on skin barrier function, immediate and long-lasting soothing effect after stripping/chemical irritation (microcirculation, capsaicin test), and on Asiatic and Caucasian subjects. In a slipt-face study, 30 females with SSS applied the product on one half-face for 28 days twice daily. At day 0 (D0) and D28, heat-cold stress was performed on both half-faces (radiofrequency system and dry air by 3 cycles 45±5°C,15±5°C). Before and after stress, IL-1α and S100A8/9 release, hydration and global clinical score of unpleasant sensations were measured.

RESULTS

Preliminary studies showed that after 28 days of product application, the product significantly improved skin barrier and presented a soothing effect whatever the triggering factor (stripping or capsaicin). In addition, up to 91% of Asiatic and Caucasian sensitive skin subjects judged the product efficient and the burden of sensitive skin significantly improved (BoSS score -14.1%).

In the heat/cold stress model, the product significantly **improved hydration** (up to +45%) **and global score of the unpleasant sensations** before and after heat-cold stress vs control. The global score was calculated by summing the score of each parameter associated with sensitive skin (as prickling, heating, burning, tightness and redness) using an 11-point scale.

Concerning the biomarkers, at D0 vs control and at D28 before stress vs D0, the **product significantly reduced IL-1α after heat-cold stress** (*Fig. 1*), **and the S100A8/9 release induced by heat-cold stress was prevented** (*Fig.2*) .

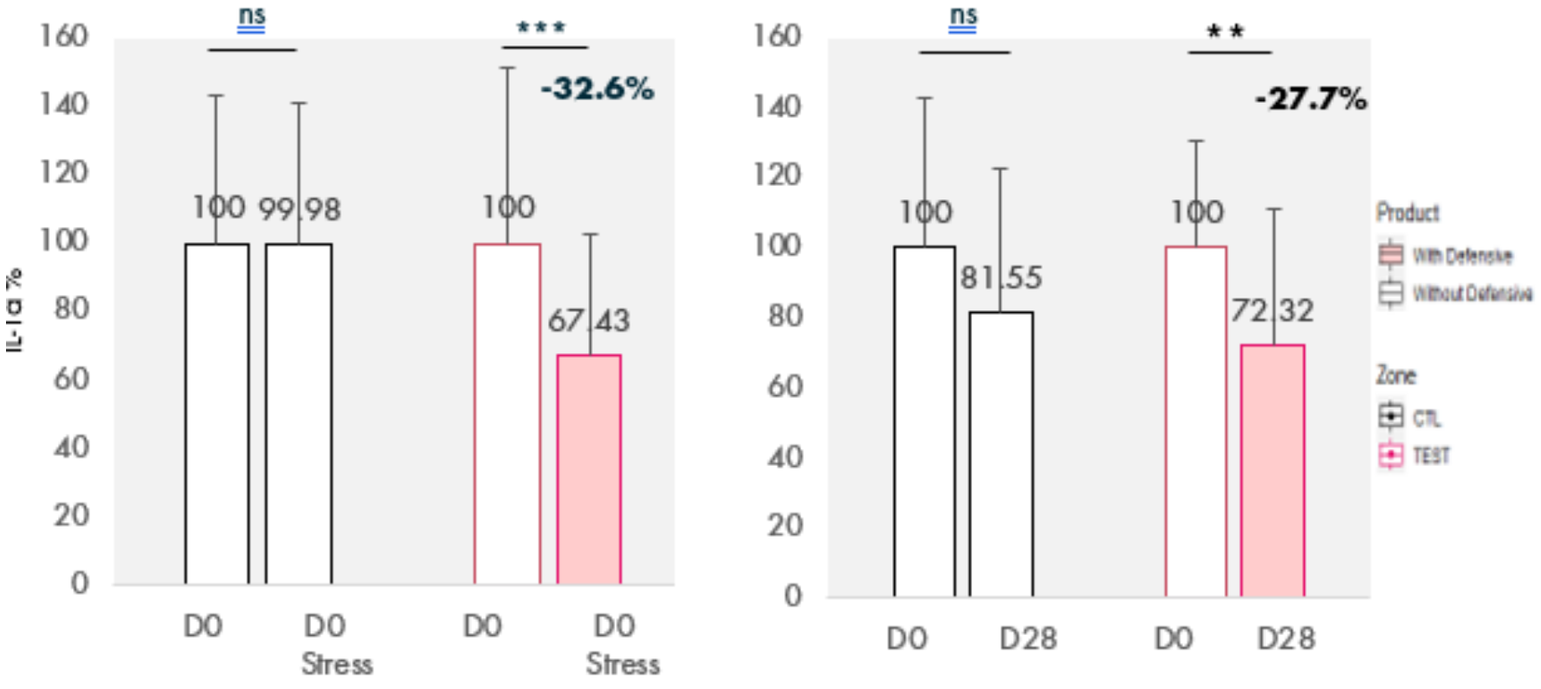

Figure 1. *IL-1α levels in percentage at D0 before and after heat-cold stress, and at D28 before stress (Wilcoxon test, ***p<0.001, **p<0.01, n=29)*

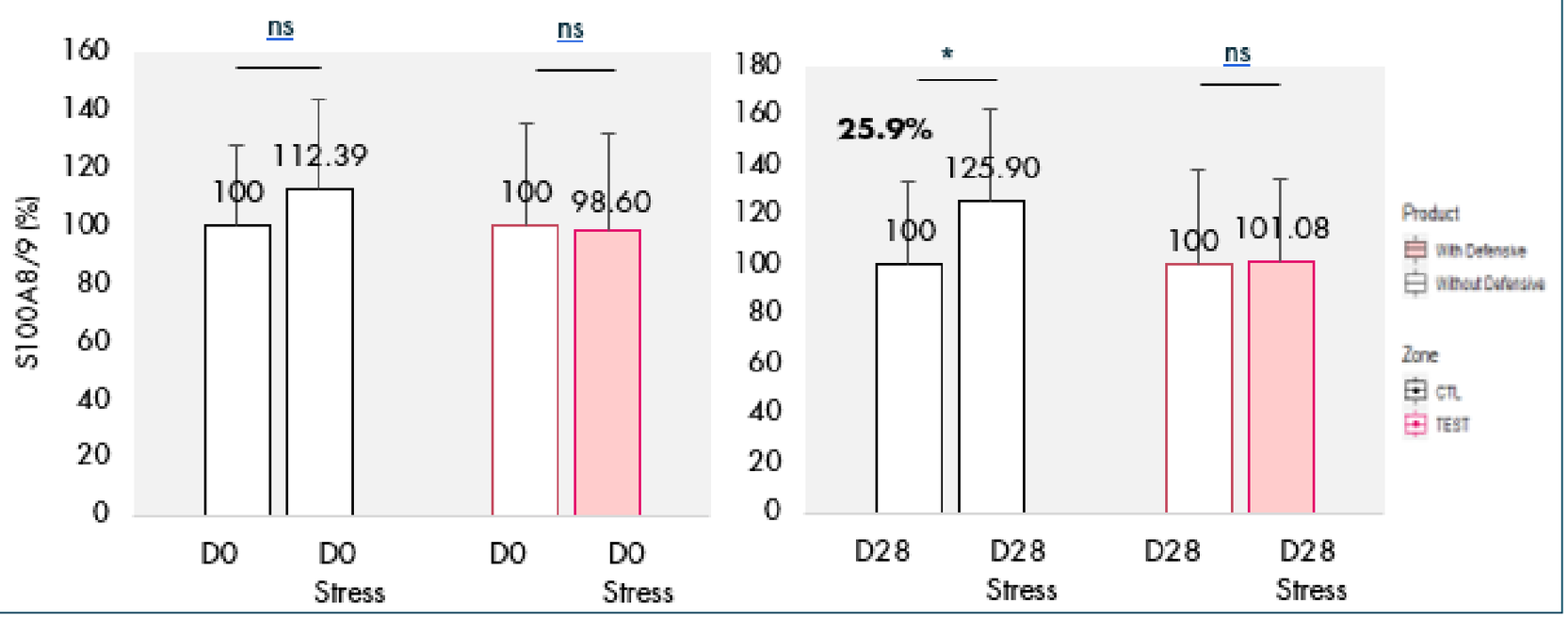

Figure 2. *S100A8/9 levels in percentage before and after heat-cold stress at D0 and D28 (Wilcoxon test, *p<0.05, n=29)*

CONCLUSION

Thus, the dermocosmetic product protected skin from mechanical, chemical, and heat-cold aggressions, in addition to pollution/UV previously studied. Through this innovative model, IL-1α and S100A8/9 seem to be relevant biomarkers to assess Sensitive Skin Syndrome.