# EX VIVO EFFICACY OF A DERMOCOSMETIC CONTAINING PEPTIDES, SALICYLIC ACID, GLYCOLIC ACID AND VICHY VOLCANIC WATER ON PROCOLLAGEN TYPE I PRODUCTION.

**Claudia Marçal[1], Priscila Correia[2], José Euzébio Gonçalves Junior[2], Beatriz Sant'Anna[2] and Delphine Kerob[3]**

[1] Dermatologist at Cariz Space, Campinas, SP, Brazil

[2]L'Oreal Brazil, Rio de Janeiro, RJ, Brazil.

[3]Vichy Laboratories, Paris, France.

## INTRODUTION

Exposome factors, especially UV, smoking and pollution, induce oxidative stress and the production of matrix metalloproteinases (MMPs) which will alter the extracellular dermal matrix with an increased fragmentation of collagen and elastin fibers. These result into skin ageing signs such as wrinkles and loss of elasticity. Therefore, having the ability to stimulate collagen synthesis is an important benefit of dermocosmetics for skin ageing management. This study evaluated the effect of a dermocosmetic containing peptides, salicylic acid, glycolic acid and Vichy volcanic water on procollagen I synthesis.

## MATERIAL AND METHODS

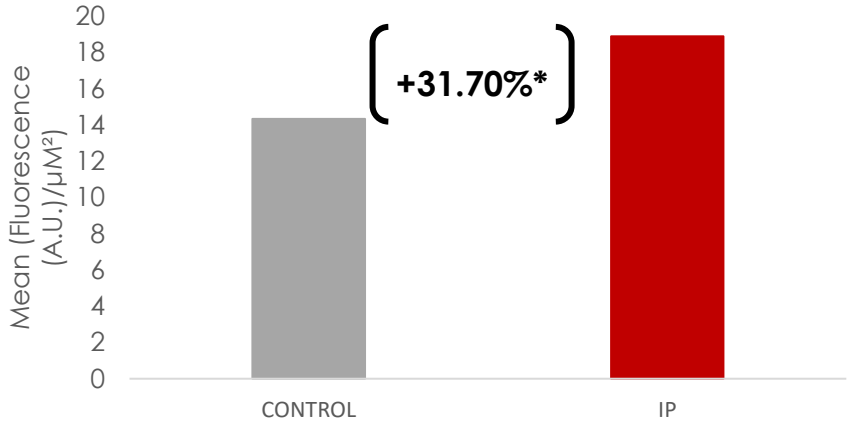
Skin fragments from one healthy female, who has undergone abdominoplasty, skin type II (Fitzpatrick), 35 YO were collected in plastic vials containing 0.9% saline and kept in refrigeration for up to 24 hours. They were fractionated into pieces of approximately 1.5 cm2, weighed, incubated in culture medium and divided in groups: control (untreated) and treated. The treated group received the product at a concentration of 25- 30 mg/cm2. The procedure was repeated for three consecutive days, totaling four applications (96 hours). After that, skin fragments were embed in Tissue- Tek® O.C.T. and frozen. Then, serial sections with 10 micrometers were collected directly in silanized slides with Cryostat. Sections were fixed, washed with phosphate buffer (PB), blocked and incubated overnight with anti- procollagen type I. Subsequently, they were washed with PB and incubated for 1 hour with the Secondary Antibody. Right after, the sections were incubated with 4'- 6- diamidino- 2- phenylindole followed by washes with PB. The slides were analyzed in confocal microscope using Leica Application Suite X software The fluorescence intensity emitted by the specific antibody labeling was quantified by ImageJ Software. The immunofluorescence assay for pro-collagen type I was performed only after 5 days of culture (T5), both in the control fragments and in the fragments treated with the product for 4 consecutive days. No measurements were made at T0, the comparation was done by control that passed on the same conditions throughout the experiment. The control fluorescence represented the amount of collagen present in the skin untreated, while the treated group demonstrated the extra amount of collagen that could be produced after treatment with IP. For statistical assessment of semiquantification of immunostaining images – effects of the product assessed on procollagen type I protein synthesis – the *t Test* was used to measure results, comparing the data the two groups. The level of significance of 5% was used (GraphPad Prism v6).

## RESULTS AND CONCLUSIONS

A procollagen type I significant increase of 31.70% of procollagen type I production was observed in treated group compared to the control ($p<0.001$), highlighting an interesting mode of action of the dermocosmetic containing peptides, salicylic acid, glycolic acid and Vichy volcanic water for antiageing benefits

## REFERENCES

Chambers ES and Vukmanovic-Stejic, M. Skin barrier immunity and ageing. Immunology, 2020; 160(2):116-125.
Krutmann J. *et. al*. The skin aging exposome. J Dermatol Sci. 2017;85(3):152-161.;




**Graphic 1.** Effects of the investigational product assessed on the production of procollagen type I in human skin culture. (*p<0.001 vs Control group)

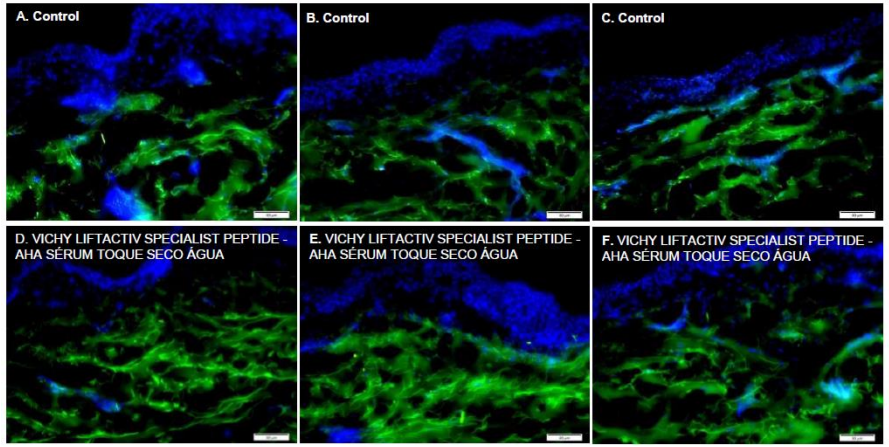



**Figure 1:** Evaluation of immunofluorescence of procollagen type I in ex vivo human skin fragments incubated with the investigational product and control. The procollagen type I protein is labeled green and the blue label represents the nucleus of the cell (DNA). The reference bar corresponds to 50 µm.

***Disclosures:*** Claudia Marçal is a consultant paid by L'Oreal Brasil. Priscila Correia, José Euzébio Gonçalves Junior and Beatriz Sant'Anna are employees at L'Oreal Brasil. Delphine Kerob is employee at Vichy Laboratories. ***Funding:*** L'Oreal Brazil.