

IMPACT OF PHOTOPROTECTION ON SKIN PHOTOAGING CLINICAL SIGNS: BENEFICIAL EFFECTS OF A 3-MONTH DAILY ROUTINE

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1 INTRODUCTION

Clinical signs of photoaging are the consequence of chronic sun exposure. Both UVA and UVB participate in the process, and it is well established that UVA exposure significantly contribute to photoaging. Several *in vitro* studies highlight beneficial effects of broad-spectrum sunscreen application on skin photodamage prevention and clinical studies corroborate with this data. These show a positive impact of daily sunscreen application upon clinical parameters as wrinkles, pigmentation and spots, in different UV exposure conditions and in various populations [1-4]. This topic is of great interest in regions presenting a high intensity UV doses and sun exposure habits as in Brazil and countries in Latin America [5]. As sun related deleterious effects can vary according to different environmental conditions and skin tones, the study in real life conditions is key to understand the photoprotection benefits considering high UV exposure regions reality and also to contribute to the photoprotection knowledge on a wide diversity of skin tones, from lighter to darker skin phototypes.

Thus, the aim of this study was to assess the improvement in some photoaging signs in a 3-month period in Brazilian volunteers from phototypes II- VI.

2 MATERIALS AND METHODS

To determine the beneficial skin effects brought by a daily application of a standardized product (SPF 50+, UVA PF (PPD) 24), 131 Brazilian healthy female volunteers, aged 30–65 years with phototypes from II to VI and regular sun exposure habits were included in a clinical study performed in Rio de Janeiro, Brazil. They were asked to apply the product daily on face during 3 months. The dorsal forearm was kept a reference and they were oriented not to change the body photoprotection habits during the study and also do not apply the investigation product.

The different phototypes groups were balanced, guaranteeing a faithful representativity of skin tone within the studied population. The study was conducted under dermatological supervision after Ethical Committee approval. Skin Colorimetric measurements were done on volunteers face and dorsal forearms before and 3 months. Standardized picture acquisition using Color face® was performed before and after 3 months. The pictures were analyzed by 15 trained experts using validated L'Oréal Atlas on skin pigmentation signals.



Skin Colorimetric parameters with Chromameter, Image Acquisition with ColorFace and Expert scoring on pictures using L'Oréal Skin Aging ATLAS.

References:

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3 RESULTS & DISCUSSION

STUDIED POPULATION

The study subjects were classified according to Fitzpatrick Phototype classification through dermatological evaluation. The Colorimetric parameters per phototype on face and forearm are described at table 1 and Expert scoring on pictures on Figure 1.

| | Phototype II | | Phototype III | | Phototype IV | | Phototype V | | Phototype VI | |
|--------------------|--------------|---------|---------------|---------|--------------|---------|-------------|---------|--------------|---------|
| | Face | Forearm | Face | Forearm | Face | Forearm | Face | Forearm | Face | Forearm |
| Mean | 38.12 | 31.46 | 30.22 | 29.81 | 13.63 | 9.63 | -4.13 | -13.24 | -28.29 | -35.74 |
| Minimum | 25.71 | 15.85 | 14.66 | 7.63 | -8.51 | -26.63 | -28.02 | -42.76 | -61.78 | -54.67 |
| Maximum | 49.97 | 48.01 | 41.09 | 50.30 | 27.87 | 30.42 | 20.40 | 13.46 | 1.70 | -0.67 |
| Median | 37.51 | 31.12 | 30.74 | 30.13 | 15.90 | 11.3 | -6.02 | -12.35 | -31.77 | -38.65 |
| Standard Deviation | 5.92 | 9.08 | 6.20 | 9.31 | 10.47 | 12.93 | 11.16 | 12.86 | 17.10 | 13.91 |

Table 1 - Baseline Skin Colorimetric parameters (ITA°) on Face and Forearms.

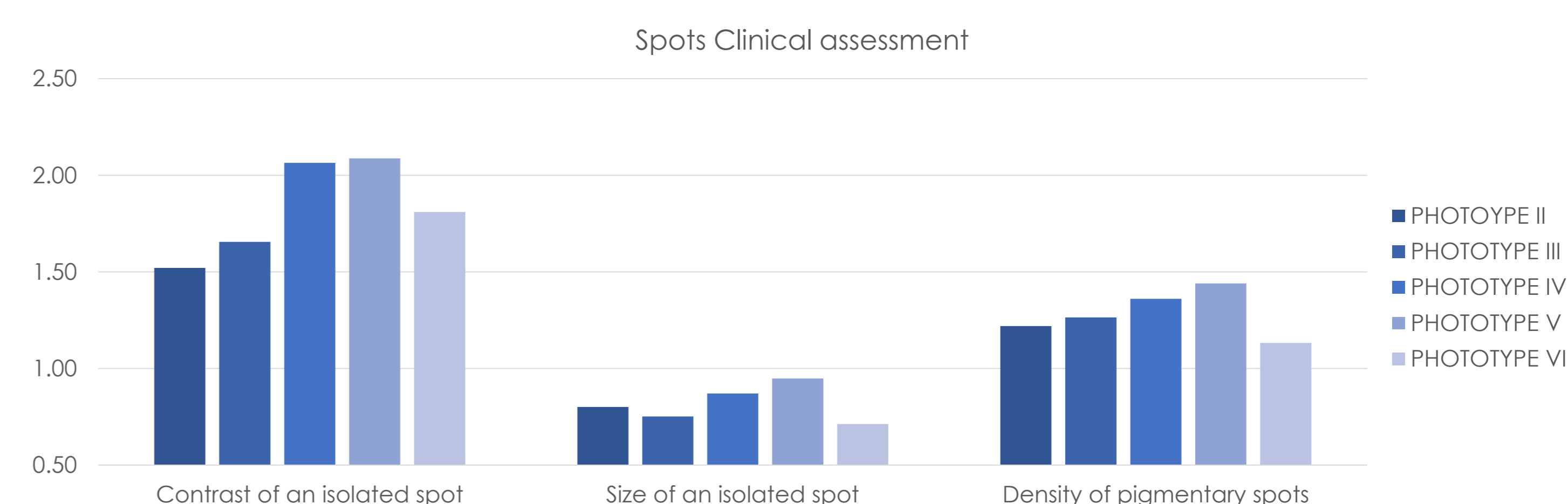


Figure 1 - Expert Scoring evaluation from phototypes II to VI subjects: Mean of baseline measurements.

INSTRUMENTAL AND CLINICAL EFFICACY OF DAILY PHOTOPROTECTION

Instrumental evaluation on face showed significant reduction of a*, reflecting reduction of skin redness over time. The reference region, forearm, where no product was applied during the study, presented significant increase of skin yellowing (b*) and darkening (decrease of ITA°). In addition, ITA° and b* colorimetric changes from baseline were significantly different between forearms and face (Figure 2). The instrumental and expert assessment from different phototypes showed that phototypes IV and V present higher spot contrast and yellowing. When comparing forearm and face colorimetric data for all phototypes, it is possible to observe that forearm's skin is darker, less red. In addition, phototypes II- IV forearms is more yellow than face skin.

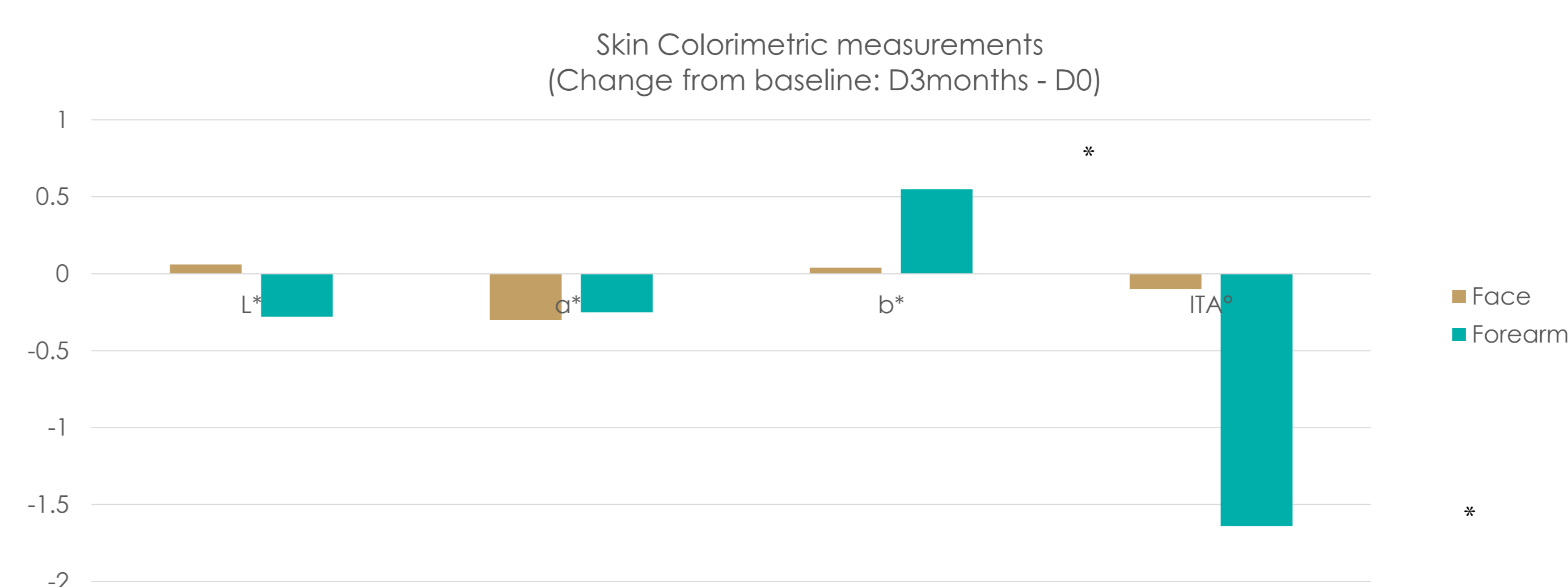


Figure 2 - Skin colorimetric measurements (L*, a*, b* and ITA°) on face (with product application) and forearms (without product application): mean change from baseline (D3 months- D0). *significantly different from Face.

After 3 months of daily use of the facial sunscreen, Expert Scoring results showed an improvement on skin hyperpigmentation, with significant improvement of contrast of isolated spot from total study sample analysis. On the non-protected skin (forearm) where no product was applied, a significant increase of skin darkening was observed.

4 CONCLUSIONS

In conclusion, the broad spectrum daily photoprotection routine improved skin photoaging signals and was found effective in a population with skin tones diversity submitted to intense UV conditions.