COMPARISON OF TWO TECHNIQUES USED IN THE EVALUATION OF THE DE DEPIGMENTATION EFFECT OF COSMETIC PRODUCTS ON BROWN SPOTS

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AIM

Brown spots, also known as senile lentigo, appear on areas of skin exposed to the sun as the subject ages. It is important to measure the intensity of these benign skin blemishes in order to provide a satisfactory cosmetic answer to this problem.
In order to evaluate the anti-spot effect of two different cosmetic products, we used two devices: the SIAScope II® and the Mexamètre MX18®, and compared the measurements obtained on the spotted areas and spot-free areas.

The SIAScope **(SIAScope II, Astron Clinica)**, a new device developed for the diagnosis of melanoma, uses a spectroscopic technique involving illumination of the skin area in question using several different wavelengths. The main skin chromophores are detected and displayed in the form of SiAgraphe views.

METHOD

Panel
- 31 women aged over 35 years,
- with brown spots on the hands or face, having a diameter of 5 mm or over.

Method of product use

The products were applied morning and evening for 2 months. Each hand or side of the face was treated with one product.

The depigmentation effect of the two cosmetic products was assessed before and after treatment using the SIAScope II® and Mexamètre MX18®, by quantifying:

- the intensity of the spots' colour (MH parameter)
- the intensity of the colour of the adjoining unspotted skin (MN parameter)

• **SIAScope II®**

SiAgraphe views representative of the melanin were obtained by measuring the the spotted area before treatment and after one and two months of treatment. The intensity of the spot colour (MH parameter) was measured in the centre of the spot and the colour of the adjacent unspotted skin (MN parameter) was measured on the same image in an area determined automatically at the edge of the spot.

• **Mexamètre MX18®**

The melanin index (MI) of the spot (MH parameter), and that of the adjacent unspotted skin (MN parameter) were also measured using a narrow-band spectrophotometer (Mexamètre MX18®).

RESULTS

1 - Comparison of values obtained for the spotted area before treatment with the two devices

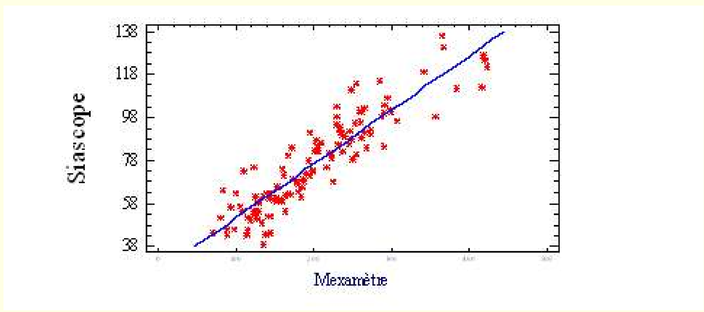

Figure 1: Variable X: Melanin index measured using the Mexamètre MX18®
Variable Y: Intensity of colour measured using the SIAScope II®.

There is a good correlation between the values given by the two devices (r^2=0.83)

2 - Example of change in intensity of spot colour, observed using SIAScope II®

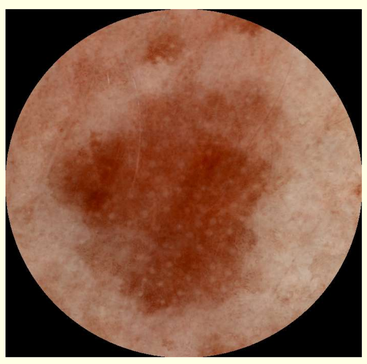

Figure 2: Example of SiAgraphe No. 2 view, representative of melanin Volunteer No. 4 on D0

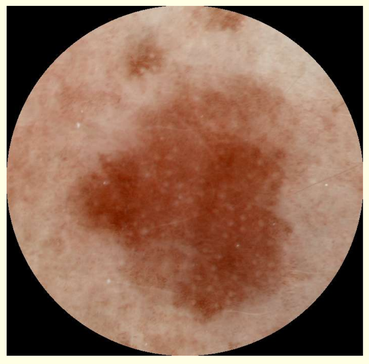

Figure 3: SiAgraphe No. 2 view, representative of melanin Volunteer No. 4 on D56

3 - Change in intensity of colour, measured using SIAScope II® and Mexamètre MX18®

The average intensity of colour in the spots (MH parameter) and in the adjacent unspotted skin (MN parameter) were calculated for each product on the 31 volunteers in the study, at each stage in the experiment: before treatment (D0 or basis), and after 1 month (D28 = T1) and 2 months of treatment (D56 = T2).

• **SIAScope II®**

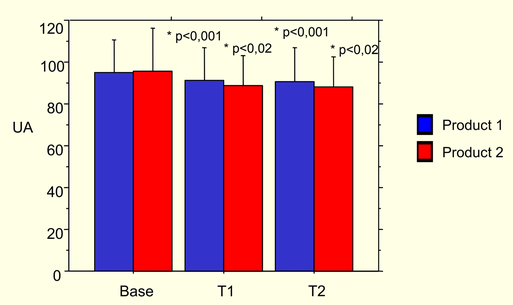

Figure 4: Changes in the MH parameter average over time, for each product involved (* = reduction of statistical significance)

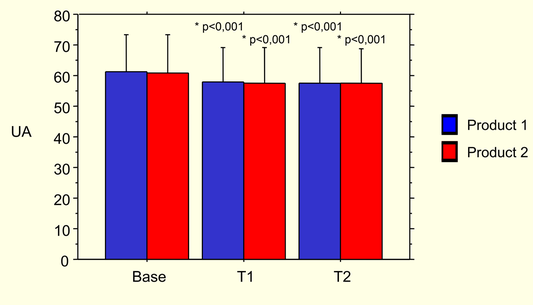

Figure 5: Changes in the MN parameter average over time, for each product involved (* = reduction of statistical significance)

•**Mexamètre MX18®**

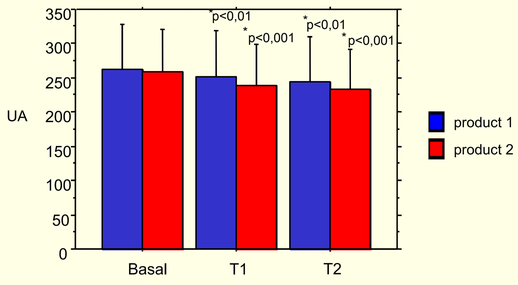

Figure 6 : Changes in the MH parameter average over time, for each product involved (* = reduction of statistical significance)

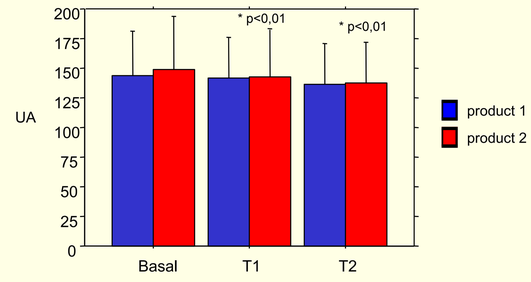

Figure 7: Changes in the MN parameter average over time, for each product involved (* = reduction of statistical significance)

For both products, the results show a reduction of statistical significance in the average value of the melanic index in the zone of excessive pigmentation (MH parameter) over time. This reduction was also observed in the colour of the adjacent unspotted skin (MN parameter).

CONCLUSION

Comparison of the values obtained using the two devices on the spot show a good correlation between the SIAScope II® and the Mexamètre MX18®.
These two techniques clearly showed a significant reduction over time in the colour of the spots treated, as well as a reduction in the colour of the unspotted skin treated.

Analysis of the SiAgraphe images will also allow changes in the sizes of spots and in heterogeneity of pigmentation, subsequent to application of the products, to be determined.

References:

1. **The Mexamètre MX16®. Bioengineering and the Skin, Chris Edwards, 1995, 127-129.**
2. **Spectrophotometric Intracutaneous Analysis – A new technique for imaging pigmented skin lesions. British Journal of Dermatology, M. Moncrieff & al, 2002, 146: 448-457**

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