ENVIRONMENTAL IMPACT IN DIFFERENTLY-AGED CHINESEMEN: A PILOT STUDY OF SUN EXPOSURE-INDUCED CHANGES IN FACIAL SIGNS

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INTRODUCTION

The deleterious impact of sun exposure on the human skin is widely documented. Excessive exposure may cause premature skin ageing (wrinkling, ptosis, red-neck, dyschromia etc.), sun-burn, photo-allergic/photo-toxic reactions, as well as Basal Cell Carcinoma or Melanoma.^{1–8} Moreover, lifestyle (smoking, alcohol consumption etc.) and aerial pollution boost the facial skin aging process.⁹⁻¹¹ Facial skin investigations in Chinese men remain scarce. To better design cosmetic solutions

adapted to consumers in their diversity, investigating the impact of environmental factors among genders is essential.

This study evaluated the impact of sun exposure on facial skin ageing signs in differently aged Chinese men with a distinct behavior regarding sun exposure.

3 **RESULTS**

- In subjects above 40 years, the forehead was the most frequently affected in NSP subjects, compared to SP subjects. Periorbital wrinkles, nasolabial folds, chin withering, cheek skin pores sh ow unpredictable fluctuations. Marionette lines were more pronounced among NSP subjects above 50 years. Signs of pigmentary or vascular disorders were greatly varying within age-classes. Vascular disorders were more difficult to assess as they may have been influenced by emotional stress, heat rate etc.
- When grouping facial signs in 4 large clinical clusters (wrinkles and skin texture, pigmentary disorders, sagging and vascular disorders), results are explicit:
 - Figure 1 shows that wrinkles and skin texture (6 signs) only differentiate between the 2 cohorts of subjects aged above 40 years, with NSP subjects showing increased grades compared to SP subjects.
 - At the exception of 2 age-classes (subjects \leq 30 years and 41–50 years), the 3 regrouped facial



MATERIAL AND METHODS

Two comparable cohorts of Chinese men (aged 18–75 years) from 2 cities (Shanghai, Hong Kong) were composed according to their usual behavior regarding sun exposure and through their use of a photo-protective product, i.e., non-sun-phobic (NSP, N = 127) and sun-phobic (SP, N = 134). Standard photographs (full-face and 45° lateral) focused on 13 facial signs that were graded by 15 experts and dermatologists, using a referential Skin Ageing Atlas. Absolute differences in scores of each sign were used (non-sun-phobic minus sun-phobic) by age-classes to better determine the impact of sun exposure and that of a photo-protecting product, if used.

Figure 5

SIMULATIONS OF THE AGE-RELATED CHANGES IN THE FACIAL APPEARANCE OF A NON-SUN-PHOBIC (NSP) OR **SUN-PHOBIC (SP) VIRTUAL CHINESE MAN** Sun phobic Not sun phobic





pigmentary disorders clusters were significantly higher in NSP subjects than in SP subjects (Figure 2).

- With regards to facial sagging, the 2 cohorts significantly differentiate in subjects aged > 60 years old (Figure 3).
- Signs of vascular disorders (Figure 4) confirm the impact of sun exposure differentiating the 2 cohorts in three age-classes (31–40, 51–60 and > 60 years). Excepted wrinkles and texture, the 41–50 years' age-class frequently shows non-significant differences No significant changes in the 4 major clusters were observed in subjects aged less than 30 years.
- The NSP and SP cohorts significantly differentiate (p < 0.05) in their average sun exposure routine. The latter was about twice as high in NSP than SP subjects during childhood and puberty and about 4 times as high in subjects above the age of 30 years. Photo-protective products were more frequently used by SP than by NSP subjects (\approx +50 %), although the difference was non-significant.
- All clinical grades were combined to previous data obtained for chronological aging or chronic aerial pollution impact and input, by 5 centered age-classes (25,35,45,55 and 65 years old), on a virtual simulation of SP or NSP Chinese man (Figure 5).

Figure 1

WRINKLES AND SKIN TEXTURE: **CHANGES WITH AGE IN THE GRADES OF** ALL 6-REGROUPED SIGNS (MEAN ± SEM) **BETWEEN NSP AND SP MEN**



Figure 3

FACIAL SAGGING: CHANGES WITH AGE IN THE GRADES OF ALL 2-REGROUPED SIGNS BETWEEN NSP AND SP MEN



Figure 2 **FACIAL SKIN PIGMENTATION CHANGES** WITH AGE IN THE GRADES OF **ALL 3-REGROUPED SIGNS BETWEEN NSP AND SP MEN**



Figure 4

VASCULAR DISORDERS: CHANGES WITH AGE IN THE GRADES OF FACIAL SKIN **DISORDERS BETWEEN NSP AND SP MEN**





25 years old



35 years old



45 years old



55 years old





35 years old



45 years old



55 years old





65 years old

CONCLUSIONS

This work illustrates for the first time the impact of sun exposure on the facial skin of Chinese men. Signs are more expressed at an older age, inversely to those observed in Chinese women, occurring at a younger age.

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