

IFSCC 2025 full paper (IFSCC2025-146)

“Unveiling the Slow Aging Factors: A Seven-Year Skin Evaluation in Korean Women”

Jiyei Choi¹, Sohyun Hong¹, Nayeong Kang¹, Yeongmin Yeon¹, Hyeokgon Park¹, Eunbi Ko¹, Jihye Kim¹, Dajeong Lee¹, Eun Joo Kim and Myeongjin Goh^{1,*}

¹ AMOREPACIFIC R&I Center, Gyeonggi-do, Korea, South

1. Introduction

"Slow aging" is a broad concept that encompasses lifestyle habits intended to slow down the aging process. It has particularly become a prominent trend in maintaining and caring for healthy skin before the onset of significant aging signs. Previous studies have often investigated the factors influencing aging by categorizing participants into "youthful" and "aged" groups at a specific point in time, or by modifying the intensity of visible skin aging signs in facial images and conducting perceptual assessments. However, these methods can be influenced by external factors, such as facial skeletal structure and features. This study aims to track skin changes in the same individuals over a long period (2017–2024) to understand how skin aging progresses over time and to identify key factors that should be focused on for achieving slow aging.

2. Materials and Methods

Facial photographs of 73 Korean women in their 30s to 50s (mean age: 39.90 ± 5.20 years, as of 2024) were taken using VISIA-CR in both 2017 and 2024. The images were analyzed using an AI skin diagnostic program to assess skin tone (brightness, redness, yellowness), wrinkles, pores, melanin levels, and skin age. The rate of skin aging was defined as the difference in skin age between 2017 and 2024 divided by the 7-year study period [Aging rate = (2024 skin age - 2017 skin age) / 7]. Participants were classified into two groups: the "Fast Aging" group (n=22) and the "Slow Aging" group (n=24), based on aging rates, and differences in skin characteristics were analyzed. Statistical analysis of the factors contributing to skin changes over 7 years and comparisons between aging speed groups were conducted using SPSS version 24.

3. Results

Over the 7-year period, participants showed significant changes, with skin brightness increasing by 1.02%, wrinkles increasing by 14.6%, and pores increasing by 13.45% ($p < 0.05$). No significant changes were found in skin redness, yellowness, or melanin levels. AI-derived skin age increased by an average of 1.94 years over the 7-year period, which was less than the actual time elapsed. Participants with an aging rate below 0 were classified into the "Slow Aging" group, and those with an aging rate exceeding 0.8 were classified into the "Fast Aging" group. The Slow Aging group showed an average decrease of 3.32 years in skin age, while the Fast Aging group had an average increase of 8.65 years (Figure 1).

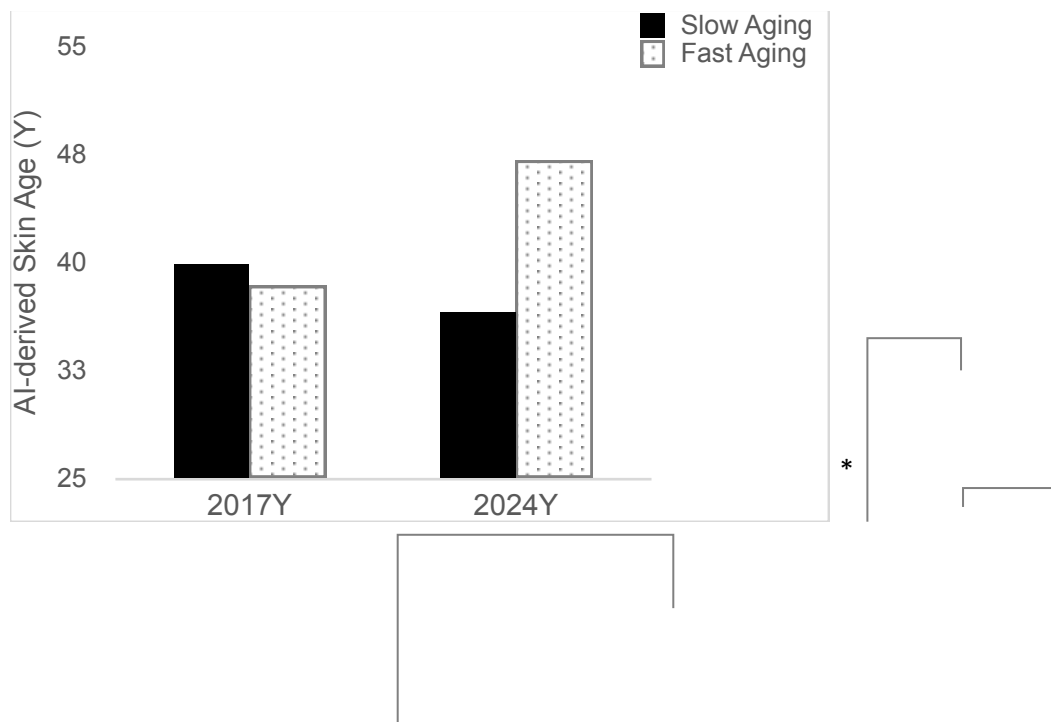
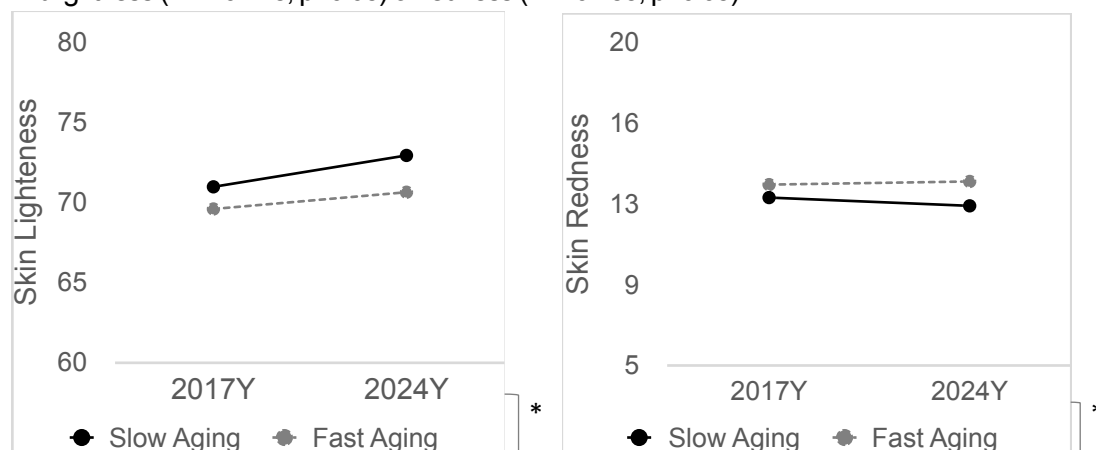


Figure 1. AI-derived skin age of the Slow aging group and Fast aging group in 2017 and 2024.

No significant differences were found between the two groups in terms of actual age, skin age, skin tone, wrinkles, pores, or melanin levels at baseline (7 years ago). However, significant differences in skin tone (brightness, redness, yellowness) were observed between the two groups over the 7 years. The Slow Aging group exhibited a prominent increase in skin brightness and a decrease in both redness and yellowness compared to the Fast Aging group (Figure 2).

Correlation analysis between the rate of aging and changes in skin tone revealed that the change in yellowness ($R = 0.511$, $p < 0.05$) had the most significant impact on changes in skin age, compared to changes in brightness ($R = -0.278$, $p < 0.05$) or redness ($R = 0.285$, $p < 0.05$).



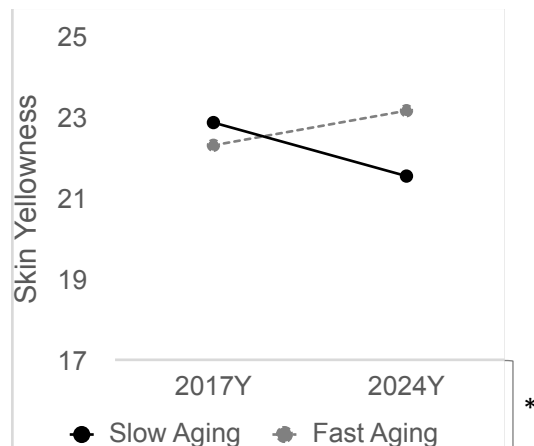


Figure 2. Skin brightness (a), skin redness (b), and skin yellowness of the Slow aging group and Fast aging group in 2017 and 2024.

4. Discussion

A number of previous studies have identified wrinkles as a major factor in the perception of skin aging [1,2], and indeed, this study found a significant increase in wrinkles over the 7-year period. However, the factor that had a greater impact on the acceleration of skin aging was not wrinkles, but changes in skin tone, particularly the increase in yellowness. Although this study was conducted on an Asian population, perceptions of skin tone can vary across different ethnicities and cultures. Studies on Caucasian populations have reported that an increase in yellowness is perceived as a positive sign of healthy skin [3]. Therefore, further research is needed to explore how these findings may differ across various ethnic groups.

5. Conclusion

In this longitudinal study of skin aging in Korean women, it was found that in groups with similar baseline skin conditions, those who experienced a reduction in yellowness had a slower increase in skin age. This suggests that skin aging can be delayed through targeted skincare practices, and for Asian women, care to reduce yellowness appears to be a key factor in achieving slow aging.

6. References

- [1] Flament, F., Prunel, A., Keufer, B., & others. (2020). Changes in facial signs due to age and their respective weights on the perception of age and skin plumpness among differently aged Korean women. *Skin Research and Technology*, 27(4), 526-536. <https://doi.org/10.1111/srt.12980>
- [2] Merinville, V., & others. (2015). Influence of facial skin ageing characteristics on the perceived age in a Russian female population. *International Journal of Cosmetic Science*, 37(5), 490-497. <https://doi.org/10.1111/ics.12252>
- [3] Whitehead, R. D., Re, D., Xiao, D., Ozakinci, G., & Perrett, D. I. (2012). You are what you eat: Within-subject increases in fruit and vegetable consumption confer beneficial skin-color changes. *PLOS ONE*, 7(3), e32988. <https://doi.org/10.1371/journal.pone.0032988>