

## Press Release

## Shiseido to Achieve Beauty Care Beyond Cosmetics with Advanced “Second Skin” Technology

~ “Second skin” expands the potential of human skin ~

Shiseido Company, Limited (“Shiseido”) has succeeded in discovering the possibility of beauty care beyond the conventional framework of cosmetics by further evolving the “Second Skin” technology\*<sup>1</sup>, which was acquired in 2018 from a venture company Olivo Laboratories in the U.S. We have previously reported that the “Second Skin” technology has the effect of “immediate remodeling of undereye bags”, and this time, we newly revealed the effect of “immediate remodeling of sagging cheeks (nasolabial lines / marionette lines). In addition, we have also created values that go beyond makeup effects such as “improving sagging skin and wrinkles with repeated application” and “enhancing ingredient penetration”. Some of these research results were presented at the 2021 Cancún Conference of the International Federation of Societies of Cosmetic Chemists (IFSCC) held from Monday, October 18 to Thursday, October 28, 2021.

This research is being promoted based on our research approach of Functionality/Japan Quality under our unique R&D philosophy “DYNAMIC HARMONY”. While achieving both undeniable effects and consumer usability, we will continue to pursue unprecedented values such as instant coverage of skin concerns, UV protection, and expansion of application areas, etc.

\*<sup>1</sup> Shiseido Acquires Breakthrough Technology from Olivo Laboratories (2018)

<https://corp.shiseido.com/en/news/detail.html?n=0000000002349>

\*<sup>2</sup> IFSCC (The International Federation of Societies of Cosmetic Chemists): An international organization dedicated to the development of highly functional and safe cosmetic technology through the world-wide cooperation of cosmetic societies.

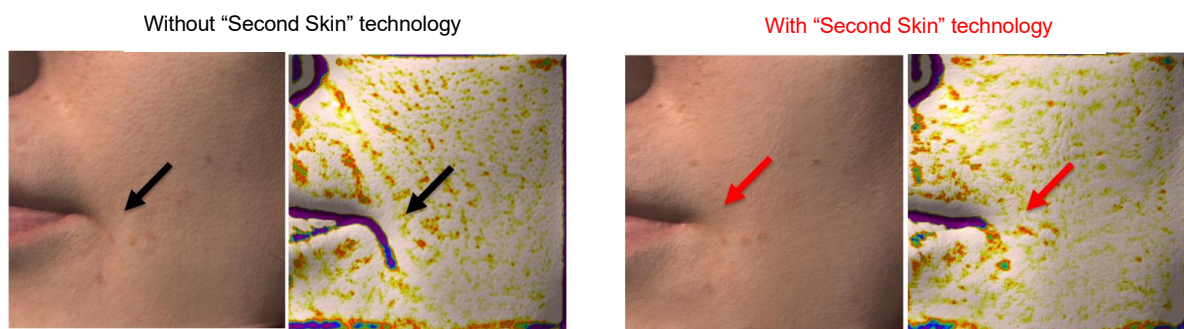


Figure 1: Immediate remodeling effect on cheeks (marionette lines) (Due to makeup effect)

(Right side photos are taken with ANTERA)

### Research Background

In 2018, we acquired the “Second Skin” technology from Olivo Laboratories, a venture company founded by Dr. Robert Langer of the Massachusetts Institute of Technology (MIT), a world authority on dermatology, and since then, we have conducted ongoing researches on the “Second Skin” technology, which forms an artificial skin on the skin that integrates with the skin and reduces skin unevenness by layering a special base agent on top of the polymer base material. Although we have already reported its effect of “immediate remodeling of undereye bags” and that it has characteristics that can be called “second skin” such as a barrier effect of permeating oxygen and carbon dioxide and protecting the skin from dryness, we continued our research in order to further evolve the “Second Skin” technology.



Figure 2: “Second Skin” technology that integrates with the skin and reduces skin unevenness.



Figure 3: Immediate remodeling effect on under-eye bags

### Advanced “Second Skin” Technology

In this round of tests, we have further evolved the “Second Skin” technology, and successfully delivered three new effects.

#### (1) Immediate remodeling effect on sagging cheeks (nasolabial lines / marionette lines)

Facial sagging refers to a condition in which the shape of the face droops due to gravity, and it occurs in various parts of the face as we age. In particular, sagging tends to occur under the eyes and on the cheeks, and as the sagging in these areas progresses, it leads to an increase in the appearance of aging. Thus, we took on the challenge of improving sagging cheeks, which are larger and deeper than the under-eye bags, by using the “Second Skin” technology. In the areas of nasolabial lines and marionette lines, which are caused by sagging in the upper and lower cheeks, respectively, we formed skin films of the “Second Skin” technology in a wider area above the lines, and confirmed that the sagging was improved due to the strong remodeling effect of the “Second Skin” technology, resulting in a reduction in the appearance of nasolabial lines and marionette lines. (Figure 1, 4).

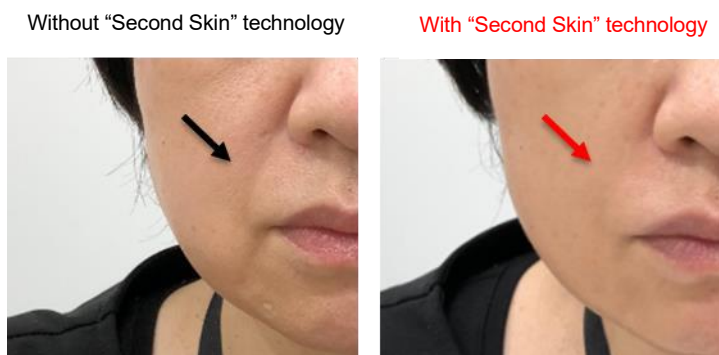


Figure 4: Immediate remodeling effect on cheeks (nasolabial lines) (Due to makeup effect)

#### (2) Improvement effect on sagging skin and wrinkles with repeated application

We found that the under-eye bags and wrinkles can be improved by repeatedly applying prototypes applied the “Second Skin” technology. In a repeated application test with 33 women aged from 44 to 66 years old, we confirmed that after eight weeks of repeated application, the volume of the eye bags was reduced by an average of 13.3% and the wrinkle grade\*<sup>3</sup> of the eye bags was improved by 20% with bare skin without using the “Second Skin” technology (Figure 5). In addition to its immediate remodeling effect, the “Second Skin” technology may have the potential to solve skin problems fundamentally.

\*<sup>3</sup>: Wrinkle grade (standard): An index of wrinkles based on the guideline established by the Japanese Cosmetic Science Society

([http://www.jcss.jp/journal/contents\\_guideline1.pdf](http://www.jcss.jp/journal/contents_guideline1.pdf)) (Japanese only)

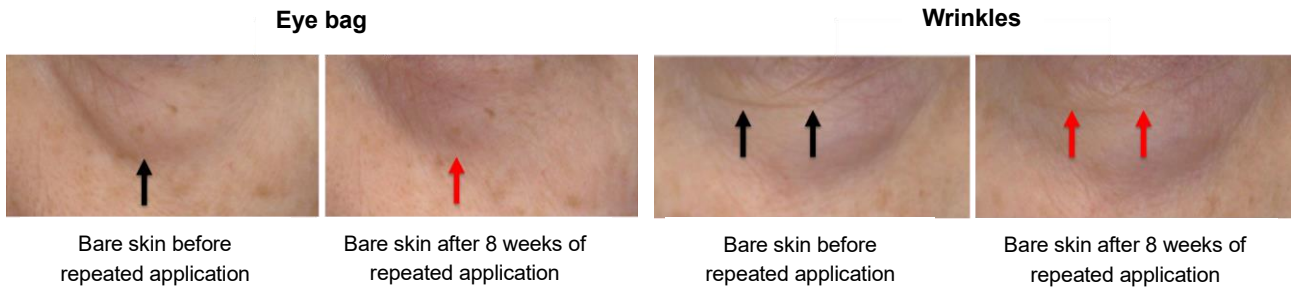


Figure 5: Improving effect on sagging and wrinkles with repeated application

### (3) Enhancement in ingredient penetration

We successfully enhanced the penetration of 4-methoxysalicylic acid potassium salt (“4MSK”), a chemical agent developed by Shiseido, into the skin by covering the skin area applied 4MSK with the “Second Skin” film. In addition, it was also confirmed that the amount of 4MSK in the stratum corneum increased two hours after applying the film. (Figure 7).

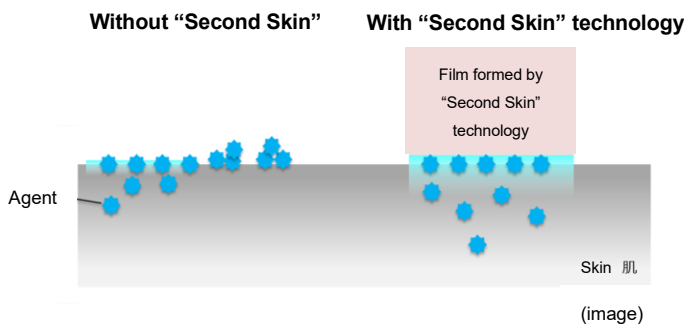


Figure 6: Enhancing effect on ingredient penetration with "Second Skin" technology (image)

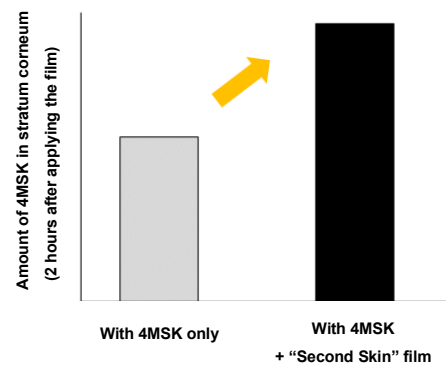


Figure 7: Increase in the amount of 4MSK in the stratum corneum by covering with “Second Skin” technology.

### Future Prospects

The “Second Skin” technology demonstrates the concept of creating another skin not affected by the environment or aging, going beyond the potential of human skin. It can protect the skin from the external environment, correct the skin shape, and improve the innate function of the skin. Going forward, we will introduce a new solution for skin concerns with an overwhelming physical effect beyond the framework of cosmetics, and apply the results of this study to the development of future products and services.

### Shiseido’s new R&D philosophy “DYNAMIC HARMONY”

- Shiseido Formulates its Unique R&D philosophy “DYNAMIC HARMONY” (2021)  
<https://corp.shiseido.com/en/news/detail.html?n=00000000003252>
- The DYNAMIC HARMONY special website:  
<https://corp.shiseido.com/en/rd/dynamicharmony/>

## **Researchers' Challenge**

### ■ Challenge to improve sagging cheeks

Many users who have sagging cheeks are also concerned about laugh lines. As a consumer myself, I had the same concern and thus I pursued my research in the hope of providing a product that really works with real effect. In the past, I had engaged in a study on cheek-lifting base agents, and such experience and findings were very useful when carrying out this research.

### ■ An insight further expanding the possibilities of the “Second Skin” technology.

The “Second Skin” technology can immediately form a film thicker than the skin. As we studied the formed film, it was found to reproduce a good skin condition like that of with a high-quality moisturizing cream, and we assumed that it might have more potential than makeup effects.

### ■ Thoughts on this research

A large number of team members including Shiseido research hubs in Japan and the U.S. and researchers from various fields worked together as one team to promote our research. Going forward, we will continue our research further developing this technology to satisfy consumers with our products and services that exceed their expectations.



Figure 8: Senior researcher, Tomoko Sekine