October, 2020
Shiseido Company, Limited

Press Release

Shiseido Reveals that Physical Properties of Applied Cosmetic Film Affect Skin Softness Perception

- Study on cosmetics that resonates with the mind and skin -

Shiseido Company, Limited ("Shiseido"), in joint research with Nagoya University, has revealed via the use of a psychophysical method*1 that friction and elasticity of the skin surface are greatly related to skin perceptions such as softness and firmness. Previously it was known that the physical properties of collagen and elastin in the dermis, which makes up most of the skin, and the subcutaneous tissue are related to skin softness, however, very little attention had been paid to the relationship between the physical properties of skin surface and softness perception. In this study, we have revealed that relationship by combining Shiseido's high expertise in affective science, psychological research and material science research. This new finding will play an important role for consumers to use cosmetics comfortably, and to enrich and revitalize the mind every day.

Going forward, Shiseido will continue to pursue the effects and efficacy of its products and develop new value that will satisfy consumers and resonate with their mind and skin through further affective science and psychological research.

Some of the research results were presented at the "IEEE World Haptics Conference 2019" held from July 9-12, 2019 and the "15th Spring Annual Meeting of Japan Society of Kansei Engineering" held from March 5-6, 2020.

*1 Psychophysical method: A technique used to quantitatively examine the characteristics of perception and consciousness that a person feels or does not feel with respect to the physical magnitude of a stimulus.

Research background

Skincare and Makeup can seem to be an insignificant daily activity, but it has the power to enrich and revitalize the skin as well as the mind. The five senses experience of skincare routines and makeup application can uplift and energize us. For instance, the touch of our own skin can bring peace of mind, the sight of our own face in makeup can brighten our mood, and the fragrance of a beautiful scent can bring comfort.

For many years, Shiseido has placed importance not only on the effects and efficacy of its products but also on making consumers feel comfortable and helping them to find their own beauty, aiming to satisfy diverse groups of consumers around the world. To this end, we have developed a unique technology that can objectively evaluate sensitivity and psychological perceptions of consumers, and conducted elaborate research.

This time, the team scientifically verified for the first time that consumers perceive small changes in the friction and elasticity of skin surface caused by cosmetics applied on the skin, and thereby judge skin softness and firmness.

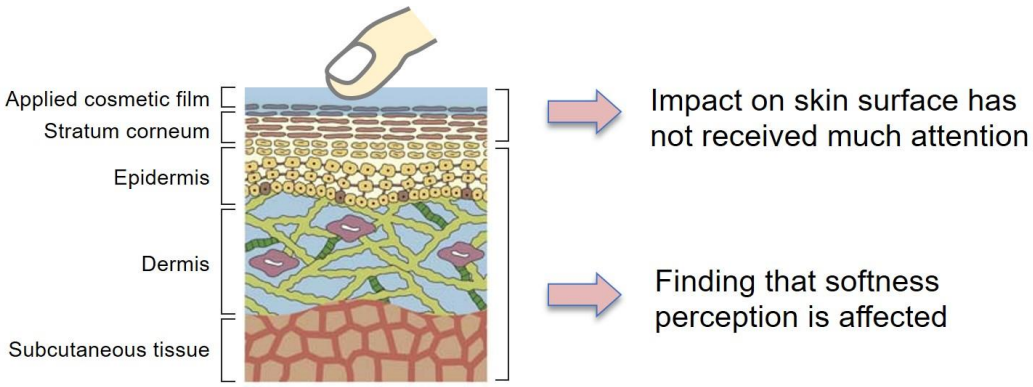

Figure 1. Study approach to skin softness (softness and firmness)

Skin surface friction (lubrication) affects softness perception

The team conducted a psychophysical experiment with 39 Japanese women in their 20s to 60s, using five types of tactile samples. These samples were models of skin with the same physical properties of softness and only step changes in surface friction. The women were asked to rank their impression of softness as they rubbed the samples with a finger (Fig. 2). The team found that the smaller the surface friction, the softer the feel (Fig. 3).

Figure 2. Tactile samples used in experiment

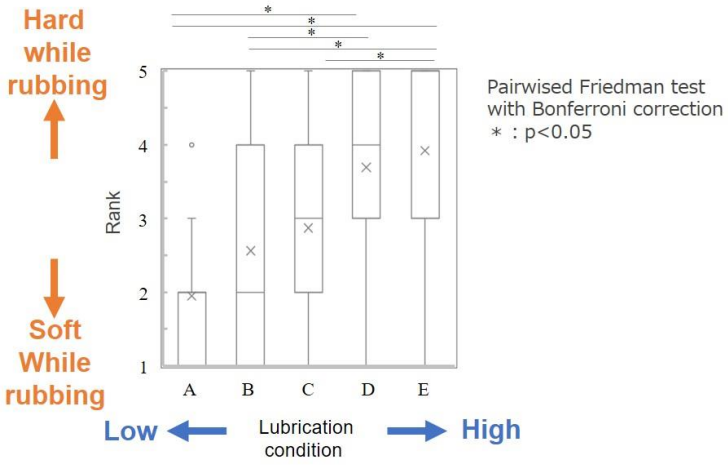

Figure 3. Perception of softness while rubbing against surface friction

Elasticity of mere 50 μm-thin film affects firmness perception

Next, the team conducted a psychophysical experiment with 25 Japanese women in their 30s to 40s, using five types of tactile samples. The sample is a two-layered skin model and only the modulus of elasticity (the amount of resistance to deformation) of the surface thin silicon film was varied in a stepwise manner. The women were asked to rank their impression of firmness (ranking method) when they pressed the samples with a finger (Fig. 4). As a result, it was found that the higher the elasticity of the surface thin film, the greater the feel of firmness (Fig. 5).

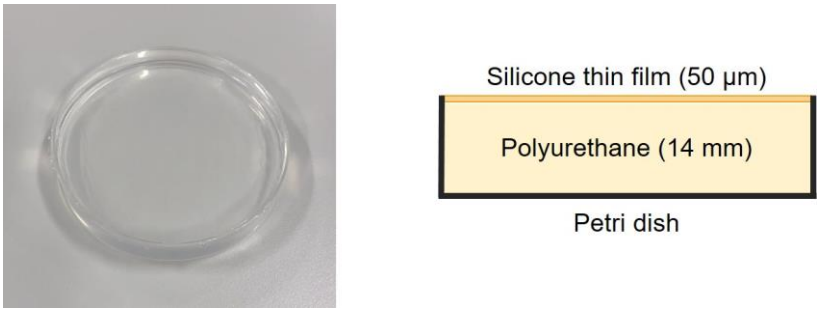

Figure 4. Tactile sample used in experiment

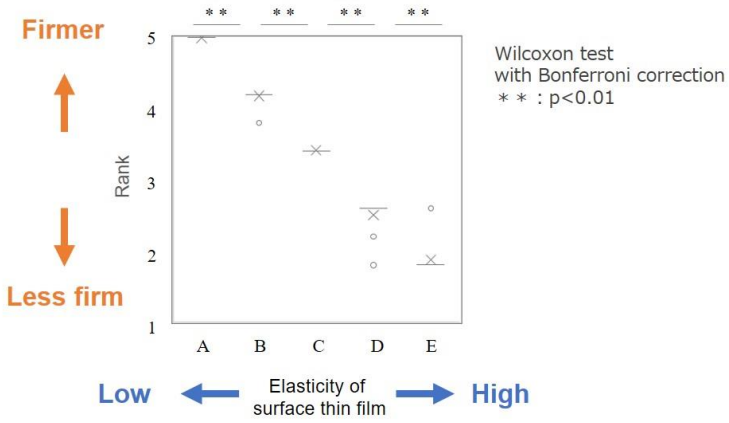

Figure 5. Perception of firmness while pressing against elastic modulus of surface thin film

Summary of research results

In this research, Shiseido scientifically verified for the first time through its unique tactile research that consumers perceive small changes in the friction and elasticity of skin surface caused by cosmetics applied to the skin, and thereby understand skin softness and firmness.

By further affective science and psychology research we will continue to develop the effects and efficacy of our products, generating new value that will satisfy consumers and resonate with their mind and skin.