

Press Release

Shiseido Develops World's First “Technology that Increases UV Protection Effect with Heat”**— Proprietary technology improves effect according to post-application environment —**

Shiseido Company, Limited (“Shiseido”) has developed the world's first technology that increases the effect of UV protection by spreading the UV protection ingredient evenly in a film coating when the applied sunscreen is warmed by heat such as from the sun. This technology, which is unique to Shiseido, prevents reduction of the UV protection effect in a harsh environment, but moreover improves the effect. The technology will be applied singly from sunscreen products released next spring.

Shiseido began research on UV protection from the very early days when the effects of UV rays were not yet widely known, and has created various technologies and products that protect the skin from UV rays. For example, in 2014 we developed a technology that increases the UV protection effect even when exposed to water or sweat. Going forward, Shiseido will continue to support consumers enjoying active, free lifestyles by offering products that strongly protect the skin from UV rays in various leisure and everyday life situations.

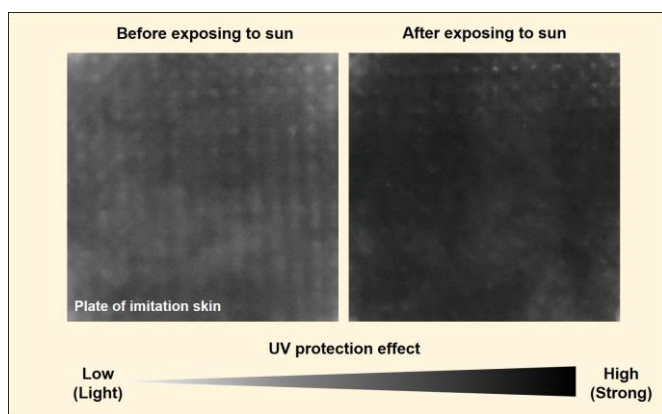


Figure 1. Confirmation of UV protection effect using UV camera

UV camera photos of sample-coated plates exposed to the sun

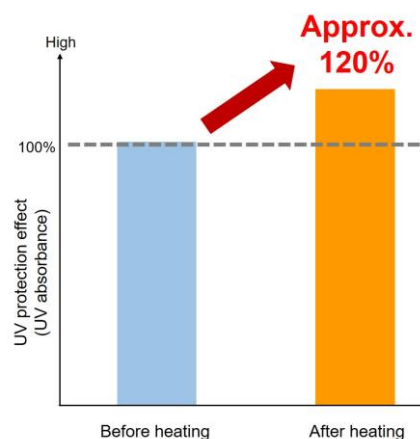


Figure 2. Confirmation of UV protection effect based on UV absorbance

When the absorbance of the sample before heating is set as 100%, the absorbance of the sample at 37°C increased to about 120%

Mechanism

Even if sunscreen appears to be evenly applied, it is extremely difficult to equally spread a molecular-level substance such as a UV protection ingredient, and if the ingredient is not evenly applied, its effect cannot be exerted efficiently. This time, we have found success in using thermal energy such as from the sun to improve the uniformity of the UV protection ingredient at a molecular level, which was considered difficult to achieve in the past. When thermal energy sensors detect heat, they spread evenly in a film coating along with the UV protection ingredient and maintain a uniform state. As a result, the UV protection ingredient becomes able to fully demonstrate its ability and improves its UV protection effect. In addition to various sun care technologies that Shiseido has developed so far, we will apply this new technology to our sunscreen products.

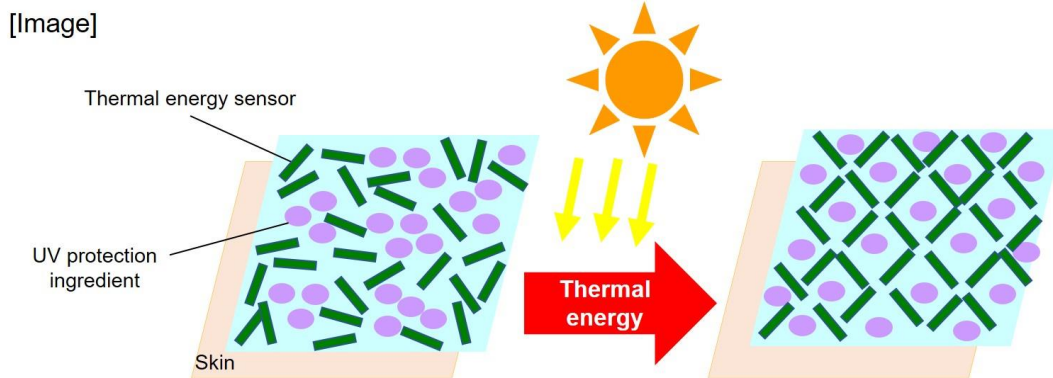


Figure 3. Mechanism of increasing UV protection effect with heat (image)

Development background

Shiseido has been engaged in research and development to meet the needs of consumers who wish to protect their skin from the adverse impacts of UV rays in every kind of environment from everyday life to harsh UV conditions. UV rays are a type of sunray that reaches the earth, and increase in number especially on sunny days. According to our research, when a human body is exposed to the sun on a sunny day, the body surface temperature reaches about 40 degrees centigrade in just a few minutes. Thus, we conducted research to increase the UV protection effect using the "thermal energy" from the sun.

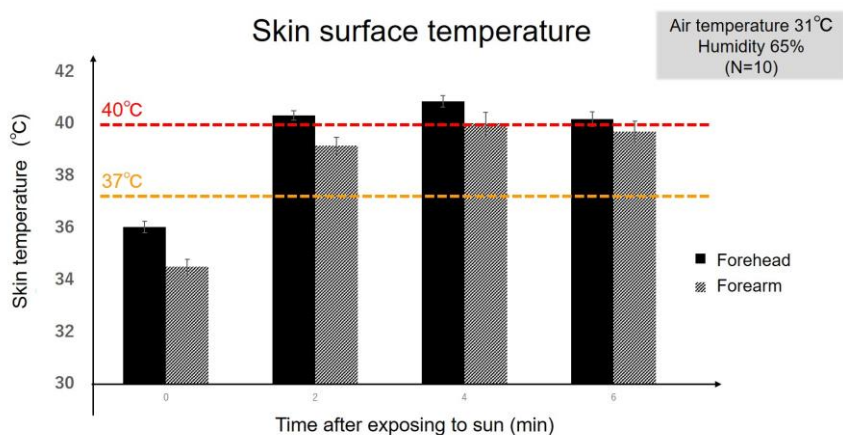


Figure 4. Temperature changes on skin surface on sunny day (Shiseido study)
The sun-heated skin surface was hotter than air temperature, exceeding 37 °C in 2 minutes and reaching 40 °C in 4 minutes

Reference: The world's first technology that increases the UV protection effect even when exposed to water or sweat (2014)

Shiseido has developed the world's first technology that increases the UV protection effect based on the finding that when a sunscreen is in contact with water or sweat, the minerals contained in water or sweat work to increase the water repellency of sunscreen and form a strong smooth film with uniform thickness. This technology enhances the protection effect using water and sweat, which can cause reduction of the UV protection effect. The technology has been applied to Shiseido products.