News Release
Kao Corporation

Kao
Kirei–Making Life Beautiful

14-10, Nihonbashi Kayabacho 1-chome, Chuo-ku, Tokyo 103-8210 Japan www.kao.com/global/en

FOR IMMEDIATE RELEASE

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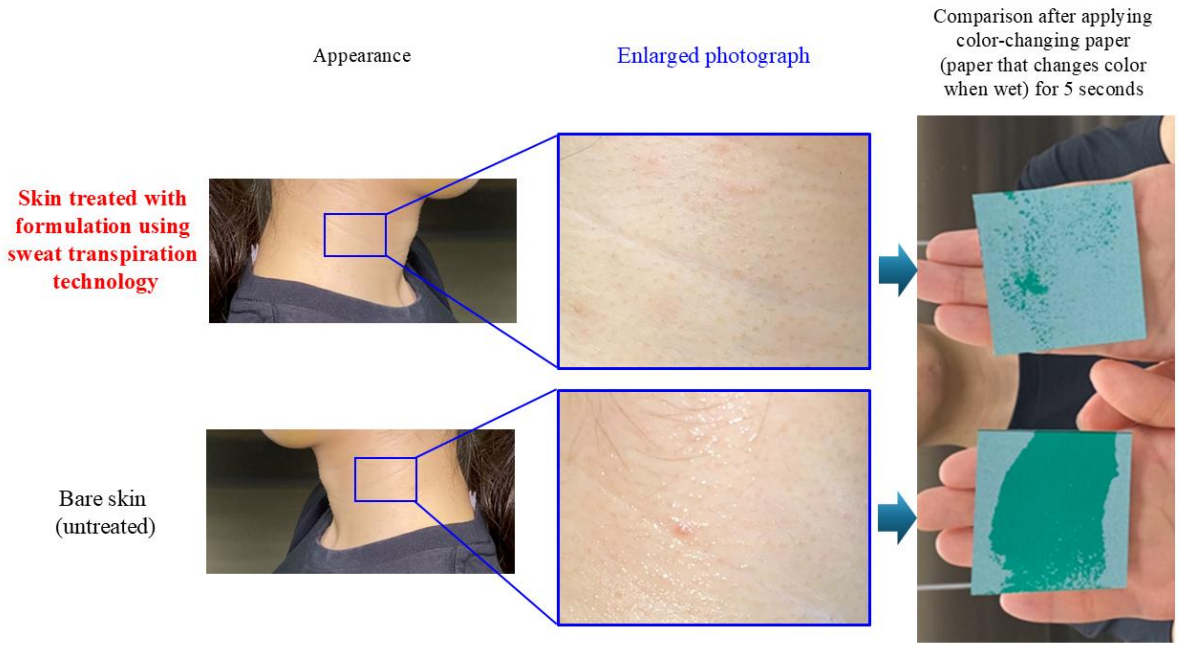
Development of Technology to Spread and Quickly Dry Sweat

Keeping Skin Comfortable in Hot Environments by Utilizing Rather than Stopping Perspiration

Kao Corporation's Skin Care Products Research Laboratory has developed a technology to rapidly spread sweat on the skin, helping it to dry more quickly (sweat transpiration technology). While harnessing the natural function of sweat, which is to cool the body by removing heat as it evaporates from the skin surface, this new technology is expected to reduce unpleasant stickiness and keep the skin comfortable, even in hot environments.



Some of the results of this research were presented at the 3rd Annual Congress of the Society of Cosmetic Chemists of Japan (December 8–10, 2025, Kanagawa Prefecture).

*This news release is a translation of a Japanese-language news release dated November 27, 2025.

Background

With the impact of climate change on human health and daily life becoming a pressing social issue, many people around the world are troubled in day-to-day life by the unpleasant stickiness and odor of sweat. However, sweat plays an important role in regulating body temperature, cooling the body by removing heat as it evaporates from the skin. Therefore, rather than trying to stop perspiration, Kao has been conducting essential

research into sweat, aiming to find ways to keep the skin comfortable while utilizing the intrinsic function of sweat.

The research has so far found that substances such as sodium chloride in sweat make it harder to dry, and that the feeling of discomfort comes from sweat mixing with sebum. Porous silica[*1] has been found to absorb sodium chloride and sebum. However, the amount of perspiration becomes excessive in hot environments, resulting in sweat remaining on the skin when it does not dry completely. This is why Kao has developed a new technology to make sweat evaporate more easily.

*1 Silicon dioxide containing countless tiny pores, which can absorb sodium chloride, sebum, etc. thanks to its large specific surface area

Sweat Transpiration Technology Spreads and Quickly Dries Sweat

Due to the hydrophobic nature of human skin, sweat tends to form droplets rather than spreading (Figure 1). This served as the inspiration for Kao's idea of creating a hydrophilic film on the skin to help rapidly spread sweat and accelerate the speed of evaporation.

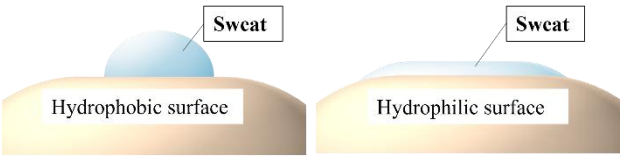


Figure 1. Images of sweat on hydrophobic and hydrophilic surfaces

Kao's researchers tested various materials to find a material that would create a hydrophilic film. Test specimens were applied to a plastic substrate, water was dropped onto them, and the contact angle was measured after 30 seconds. A smaller contact angle shows water spreads more easily on the surface. The test results indicated that when a certain hydrophilic plate-like powder was applied to the surface, the contact angle of the water droplets decreased. Combining a certain hydrophilic plate-like powder with porous silica made the contact angle even smaller, indicating that water spread rapidly (Figure 2).

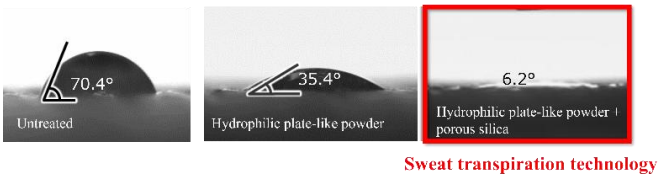


Figure 2. Contact angle of water on the surface of a plastic substrate with materials applied

Using Sweat Transpiration Technology Reduces Evaporation Time

Synthetic leather was used to mimic skin in experiments to confirm whether sweat would dry more easily if spread over a large area. A prototype formulation containing hydrophilic plate-like powder and porous silica was applied to the synthetic leather, and artificial sweat[*2] was sprayed onto it. When the evaporation time of the artificial sweat was measured[*3], the time for the sample with the prototype formulation applied was found to be approximately 33% shorter than the untreated sample (Figure 3).

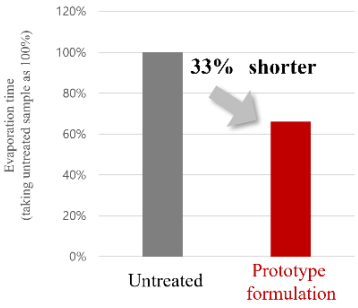


Figure 3. Comparison of evaporation time of artificial sweat

*2 Solution of sodium chloride and lactic acid in water

*3 The time for 60% of the artificial sweat to evaporate was measured in hot conditions of 30°C, 60% humidity.

Summary

Kao has developed a technology to dry sweat quickly on the skin. As well as keeping the skin comfortable in hot environments where people tend to sweat, this technology has the potential to prevent excessive perspiration and support the natural function of sweat.

Going forward, Kao will deepen essential research into sweat, and proceed with research aiming to reduce the discomfort of sweat in hot environments.

About Kao

Kao, a Japan-based manufacturer of personal care and household products, cosmetics, and specialty chemicals creates high-value-added products and services that provide care and enrichment for the life of all people and the planet. Through its brands such as *Attack* laundry detergent, *Bioré* and *Jergens* skin care products, *Laurier* sanitary products, *Curél*, *SENSAI*, and *MOLTON BROWN* cosmetics, and *Oribe* hair care products, Kao is part of the everyday lives of people across Asia, the Americas, Europe, the Middle East, and Africa. Combined with its chemical business, which contributes to a wide range of industries, Kao generates about 1,630 billion yen in annual sales. Kao employs about 32,600 people worldwide and has more than 130 years of history in innovation. As an enterprise that provides products people use on a daily basis, the Kao Group takes responsibility to actively reduce the environmental footprint of its products throughout the product lifecycle. This is laid out in Kao's ESG strategy, the Kirei Lifestyle Plan, which launched in 2019.
Please visit the Kao Group website for additional information.

Media inquiries should be directed to:

Public Relations
Kao Corporation
corporate_pr@kao.com