Scientists invent new sunscreen made from pollen

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Traditional chemical sunscreens can damage coral reefs. Scientists say there's a fix using one derived from tea plant pollen.

A new sunscreen made from the pollen of plants in the tea family works about as well as existing sunscreens, according to new research (Image credit: FlowerPhotos/Universal Images Group via Getty Images)

Sunscreen made from pollen could protect beachgoers from sunburn while minimizing harm to coral reefs, a new study finds.

Researchers found that a gel made from the pollen of camellia flowers (*Camellia sinensis*) blocked ultraviolet (UV) light about as well as existing commercial sunscreens, such as those made with oxybenzone or octinoxate. But unlike these conventional options, the pollen-based gel didn't cause coral bleaching in a laboratory experiment. Coral bleaching is the process by which corals expel the symbiotic algae living within them, leaving the corals more vulnerable to environmental stress.

The new sunscreen formula lays the "foundation for an explosion of potential new discovery" in sustainable sun protection, Craig Downs, director of Haereticus Environmental Laboratory, a non-profit organization

dedicated to preserving ecosystems, who was not involved in the study, told Live Science.

Researchers estimate that between 4,000 and 14,000 tons (3,600 to 12,700 metric tons) of UV-filtering compounds from chemical sunscreens enter the ocean each year, peaking during tourist seasons. These compounds, which include oxybenzone, octocrylate and octinoxate, among others, build up in the environment and have been linked to coral bleaching. Mineral sunscreens such as zinc oxide and titanium oxide are thought to affect aquatic animals less, but scientists are still studying these effects.

"We wanted to develop an affordable and effective natural sunscreen that is non-allergenic to humans and eco-friendly to the environment," study co-author Cho Nam-Joon, a materials scientist at Nanyang Technological University Singapore, said in a statement.

In the recent study, published Sept. 4 in the journal Advanced Functional Materials, Cho and colleagues looked to do this with pollen from plants in the tea family. "We know that pollen is naturally UV-resistant, as its shell needs to protect its inner contents from harsh environmental conditions, including sunlight," Cho said in the statement. Because camellia flowers are self-pollinating, their pollen is usually considered non-allergenic.

Both gels absorbed UV rays, the team found, but the camellia gel absorbed more UVB rays — shorter-wavelength rays primarily responsible for causing sunburn and skin cancers — than the sunflower gel did. When tested on mice, both gels prevented skin damage when the mice were exposed to UV light for a few minutes per day. Mice that didn't receive sunscreen had thinner skin after the same UV exposure.

The camellia pollen sunscreen had a sun protection factor (SPF) of about 30, and the sunflower pollen sunscreen's SPF was around 5. When applied to a person's forearm, the camellia pollen even kept that person's skin 9 degrees Fahrenheit (5 degrees Celsius) cooler in sunlight than skin with chemical sunscreen applied.

The scientists also looked at how these sunscreens might affect corals. They added samples of a commercial chemical sunscreen and the camellia and sunflower gels to saltwater tanks containing hard coral called *Acropora*. The coral exposed to regular sunscreen began bleaching after two days and was completely white after two weeks. But the corals exposed to the pollen-based sunscreens appeared unbleached even after two months.

"What they're doing are first steps, but they're really important first steps," Downs said. Some of the next steps might be to assess whether the pollen-based sunscreen is toxic to other wildlife in natural environments, then clear safety tests in humans, Downs said. But if those trials are successful, "in five to eight years, this might be a commercial product."

Disclaimer

This article is for informational purposes only and is not meant to offer medical or skin care advice.

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