

The JoongAng

Sunscreens Killing Corals... Korean Scientist Finds Solution in Pollen

**Reporter Cheon Kwon-pil**

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A hand applying the pollen sunscreen developed by Professor Nam-Joon Cho's team at Nanyang Technological University (NTU) (left) and the camellia pollen used as the raw material (right). Photo by NTU

A Korean scientist has developed a natural sunscreen that protects the skin from intense UV rays while being harmless to marine life. It is the world's first sunscreen made from pollen. Professor Nam-Joon Cho's research team at

ed that the pollen-based sunscreen effectively absorbs and blocks harmful ultraviolet rays (UV

) just like regular sunscreens that use chemicals . It blocks approximately 97% of UV rays with an SPF of 30.

Applying sunscreen to coral produces amazing results



A comparative study comparing the effects of regular sunscreen and pollen-based sunscreen on corals revealed that corals treated with chemical sunscreen exhibited bleaching. (Photo provided by Professor Nam-Joon Cho)

What the research team focused on more was the impact of sunscreen on the marine ecosystem. Sunscreen, commonly used on beaches, can be fatal to marine life, especially coral reefs, if it enters the ocean. Chemicals like oxybenzone, which absorb UV rays and release them as heat, become toxic when they enter the coral.

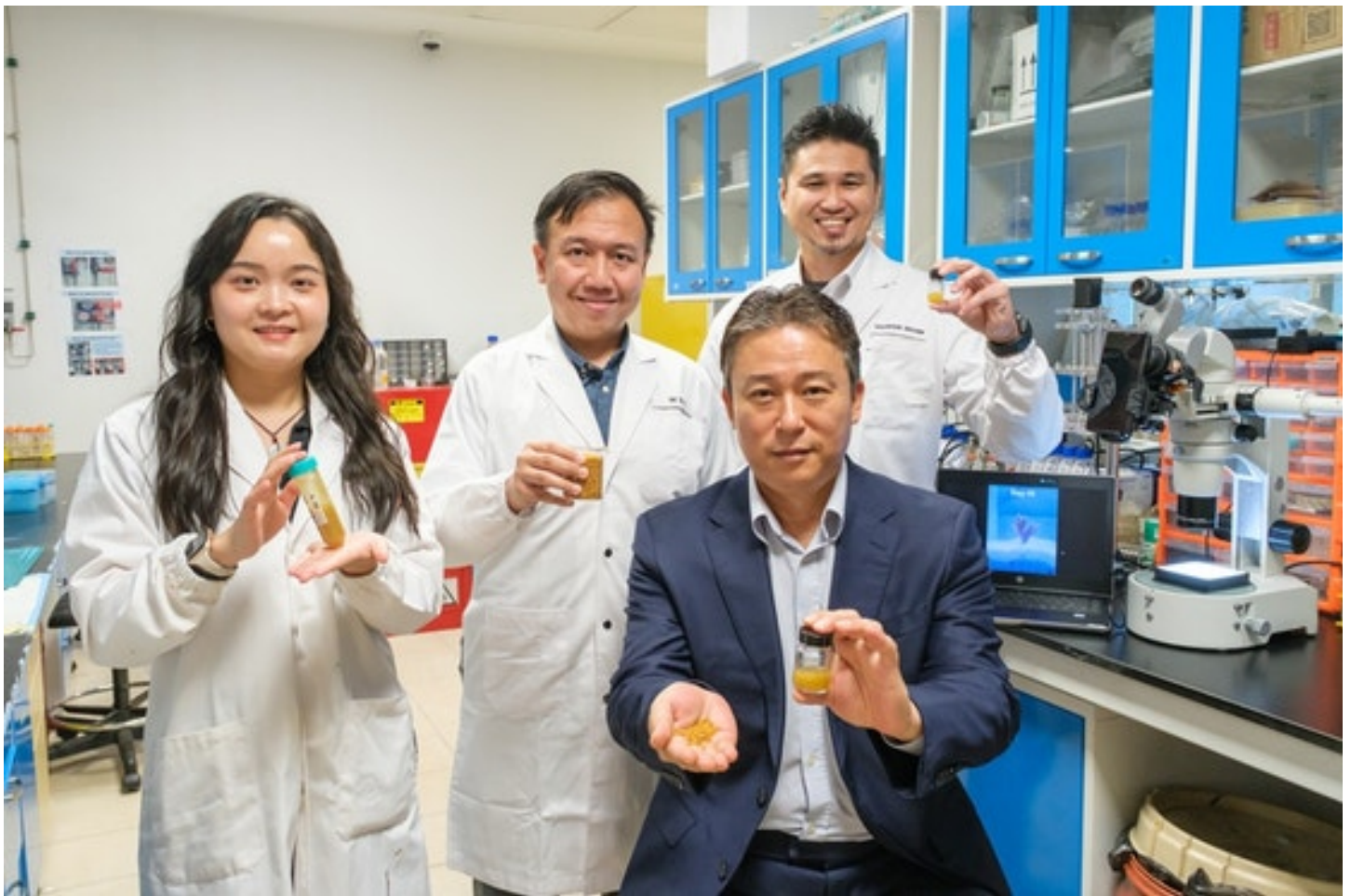
It's estimated that approximately 6,000 to 14,000 tons of sunscreen are washed away by people or end up in the ocean through wastewater each year. Consequently, countries like Hawaii and Palau have banned the use of sunscreens containing oxybenzone.

The research team stated that pollen-based sunscreens, unlike conventional sunscreens, can minimize the impact on the marine ecosystem. In fact, when sunscreen containing harmful chemicals was applied to coral, coral bleaching occurred within two days, and death occurred by six days. In contrast, corals treated with pollen-based sunscreens remained healthy for 60 days. In an interview with

If-pollinating plant, so its pollen rarely causes allergies and has excellent UV blocking performance.”

The pollen sunscreen was confirmed through experiments to have a cooling effect that lowers skin temperature by about 5 degrees Celsius in addition to blocking UV rays. The research team explained that this is because pollen absorbs less light in the visible and near-infrared ranges, resulting in less heat build-up in the skin.

A scientist obsessed with pollen expands into diverse fields.



Professor Nam-Joon Cho (bottom right) and his research team at Nanyang Technological University (NTU) hold a sunscreen developed using camellia pollen. Photo by NTU

Pollen is so hard and stable that it's sometimes called the "diamond of plants." Pollen travels to the pistil to spread the plant's genes for reproduction, and its robust outer shell allows it to withstand harsh environments. This is why Professor Cho, a materials engineer, has focused on the utility of pollen.

Pollen sunscreens also stemmed from the realization that while existing sunscreen ingredients are beneficial to the human body, they can have the fatal side effect of killing coral reefs when released into the ocean. Professor Cho stated, "The next step is to establish a mass production system (for pollen sunscreen). Going forward, we plan to expand our pollen material technology beyond sunscreens to diverse fields such as 3D printing bioinks and drug delivery systems."

Reporter Cheon Kwon-pil feeling@joongang.co.kr

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