

## Hair used to make new material that helps grow vegetables through hydroponics



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Sep 21, 2022 08:45 pm

**Hair collected from local salons can be put to work in hydroponics farming, with scientists extracting keratin from it to make materials that have been used successfully to grow vegetables like bok choy and kale.**

A Nanyang Technological University (NTU) team mixed the keratin with cellulose fibres to make substrates, which act as a support structure and reservoir for water and nutrients in hydroponics.

It found that the crop yield from the keratin-based substrates was comparable to that from commercially available ones.

In June, the team's findings were published in peer-reviewed scientific journal ACS Sustainable Chemistry & Engineering.

Professor Ng Kee Woei, who led the research, told reporters on Wednesday that the growth materials can also be made from other sources of keratin, such as feathers from slaughterhouses.

"We were not trying to find the best protein in the world that can do this job, but we wanted to find a sustainable source that is abundant," said the associate chair for research at NTU's School of Materials Science and Engineering.



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He added that the new growth material has an advantage over traditional substrates - made from materials such as rock and foam - in that it is biodegradable and can become a source of nutrients for plants when they degrade.

Dr Zhao Zhitong, a research fellow at the same school, said the new material can absorb and retain large quantities of water, making it a "promising growth medium" to support seed germination and crop growth.

The team is in talks with other organisations, including local urban farms, to perform large-scale field tests, one of which aims to tweak the composition of the substrate to accommodate different vegetables, such as those with thicker roots.

The research is being funded by the Campus for Research Excellence and Technological Enterprise under the National Research Foundation, which sets the nation's direction for research and development.

Prof Ng said that while the keratin-based substrates cost up to three times as much as existing ones, these figures could be reduced as its research scales up.

He also addressed how some consumers may feel uncomfortable about food grown in products made from hair.

"When I asked the farmers, their comment was that for as long as mankind has been practising agriculture, we've been using animal manure (as fertiliser) for plants, and we've had no problem with eating them," he said.

"What's wrong with using something from hair?"