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Innovation > Sustainability > Turning kale waste into health and personal care products

## TURNING KALE WASTE INTO HEALTH AND PERSONAL CARE PRODUCTS

 SUSTAINABILITY

### A group of researchers have found a more sustainable and efficient way to extract useful compounds from kale waste

**Spotted:** Millions of fruits and vegetables are discarded globally every year for aesthetic reasons. Farmers tend to cut off the outer leaves of leafy vegetables like kale and lettuce once harvested to make them the perfect size and aesthetically pleasing to sell – resulting in many perfectly good, edible leaves being thrown away. To help reduce food waste, scientists from the Nanyang Technological University, Singapore (NTU Singapore) have developed a new way to convert kale waste into health and personal care products.

Phytochemicals are chemical compounds produced by plants, and because they are known to prevent damage to cells in the body, they are widely used in consumer products. The current method of extracting these compounds requires harmful chemicals like methanol and is energy-intensive, requiring high pressures and temperatures. NTU scientists have found a more sustainable and efficient method that uses natural deep eutectic solvents (NADES). These non-toxic liquids are made of plant-based compounds and can be used to turn waste into useful chemicals.

After experimenting on kale waste in the lab, the researchers found that their new approach produced an extract that contained twice the volume of polyphenols when compared with traditional methods. And, these bioactive phytochemicals remained ‘active’ even after being stored at 4 degrees Celsius for 30 days, displaying effective shelf-life.

Video source [NTU Singapore](#)

The study was published in the scientific journal Separation and Purification Technology, and the team has filed a patent in Singapore for the innovation. The researchers are also investigating the feasibility of applying their method to extract beneficial compounds from other fruits and vegetables and medicinal plants, like dragon fruit, spinach, and lettuce.

As the world population continues to grow, so does the volume of food waste. In the archive, Springwise has spotted many innovations to tackle our organic waste problem, like [producing footwear from food waste](#) or using [artificial intelligence \(AI\) to reduce waste](#) for retailers.

Written By: Anam Alam

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Email: [asxhu@ntu.edu.sg](mailto:asxhu@ntu.edu.sg)

Website: [ntu.edu.sg](https://ntu.edu.sg)

Contact: [ntu.edu.sg/contact-us](https://ntu.edu.sg/contact-us)

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### Takeaway:

Singapore generated almost [813 thousand tonnes](#) of food waste in 2022, with only 18 per cent being recycled. Approximately [20 per cent of produce](#) is discarded for aesthetic reasons like weird shapes, odd colours, or blemishes, even though it is perfectly edible. The NTU research team's approach offers a practical way to tackle food waste, contributing to a circular economy and helping to make the health and beauty industry greener.