

# UPCYCLING CHICKEN FEATHERS AS PART OF EFFORTS TO CREATE SINGAPORE'S FIRST ZERO-WASTE POULTRY PROCESSING PLANT

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SINGAPORE: Upcycling chicken feathers and by-products is among new processes being developed by Nanyang Technological University (NTU) and poultry producer Leong Hup as part of efforts to create Singapore's first zero-waste poultry processing plant.

These methods of reusing waste materials from poultry farming were developed under a research cooperation agreement signed in March, NTU and Leong Hup said in a news release on Tuesday (July 5).

A "key innovation" is the use of keratin from chicken feathers as a material for egg trays, e.g biodegradable substitute for synthetic polymers.

It is also a greener alternative as the manufacture, use and disposal of synthetic polymers result in greenhouse gas emissions as such polymers are made from petroleum.

"Billions of kilograms of unwanted chicken feathers are discarded from poultry processing plants annually," NTU and Leong Hup said, adding that this by-product is usually either buried in landfills or incinerated.

Professor William Chen, director of NTU's Food Science and Technology program, said the project showed that feathers can no longer be viewed as a waste product.

“Using chicken feather fibers in composite materials is a new source of materials that can be economical, environmentally friendly and recyclable,” added Prof. Chen, who is also co-leader of the research collaboration. ^

The process begins by washing the chicken feathers in distilled water and detergent to remove impurities such as blood stains and oil. They are then dried at room temperature for four days and crushed with a crusher.

The feather fibers and unsaturated polyester resin are mixed and placed in glass molds and kept in a hood for one day.

The end result is a material that is more durable compared to synthetic polymer alternatives.

Laboratory tests found that the material, made from chicken feather keratin, can withstand nearly twice the force applied to it compared to traditional plastic trays used to hold chicken, NTU and Leong Hup said.

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The research collaboration also developed a method for converting biological waste from poultry farming – such as blood and bones – into an alternative and inexpensive culture medium that could be used to cultivate cell-based meat.

Source link

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