

Singapore develops plant-based cell culture scaffold for cheaper, sustainable cultured meat

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A research team from the National University of Singapore (NUS) has successfully used common plant proteins to 3D-print an edible cell culture scaffold, allowing more affordable and sustainable lab-grown meat to be served on the table.

Prolamins are a family of plant storage proteins that, due to their specific amino acid profile, have low nutritional value. In fact, prolamins are generated as waste in the starch and vegetable oil industries. Nevertheless, Professor Huang Dejian, Deputy Head of the NUS Department of Food Science and Technology, and his team leveraged these characteristics of prolamins to come up with an affordable and sustainable resource for meat culture.

Prof Huang and his team are actively working on refining the plant protein-based technology. For instance, more studies are needed to better determine how the particular structure and composition of the prolamin constructs might impact the growth of animal stem cells and how they form muscle tissue.

“Moreover, we need to ensure the resulting meat products are market-ready, with safety profiles that will satisfy rigorous regulatory demands and nutritional compositions that will fulfil recommended dietary needs,” says Prof Huang. “Of course, they need to be appetising, too. Flavour, aroma and texture need to be carefully calibrated to compete with traditionally farmed meat products.”