

Aloe vera new secret ingredient in cultured meat

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A new study published in npj Science of Food presents a significant advancement in cultured meat production by utilising Aloe vera as a natural, scalable, and cost-effective scaffold. This research is a collaboration between Dr Sharon Schlesinger and Prof. Oded Shoseyov from the Robert H. Smith Faculty of Agriculture, Food and Environment.

Cultured meat production faces substantial challenges regarding scalability, cost-efficiency, and structural integrity. This breakthrough provides a sustainable solution by using Aloe vera, a widely available agricultural byproduct, as a biocompatible scaffold that encourages cell adhesion, proliferation, and the formation of the extracellular matrix. By incorporating oleic acid, the research team successfully promoted the development of fat-like tissue, referred to as "lipid chunks," which could enhance the sensory experience of plant-based meat substitutes.

Additionally, the study introduces a novel bioprocessing approach that integrates Aloe vera scaffolds into a microfluidic single-use bioreactor (MSUB). This technology, developed by Dr Jonathan Giron and his team at Reichman University, enables cost-effective large-scale production, making cultured meat more commercially viable and reducing dependence on animal-based materials.

Unlike synthetic or polymer-based scaffolds, Aloe vera's natural structure features high liquid absorption properties, creating an optimal environment for cell growth without the need for additional reinforcement.

"Aloe vera has long been recognised for its medicinal and nutritional benefits, but our study demonstrates its great potential for sustainable food production," said Dr Schlesinger. "By repurposing this natural byproduct into a biocompatible scaffold, we take a significant step toward scalable, cost-effective cultured meat production that could help address global food security and environmental challenges."

Aloe vera's FDA-approved status as a food additive further supports its potential for industrial application in cultivated meat. With the global production of Aloe vera reaching up to 500,000 metric tons annually, its use as a renewable, edible scaffold aligns with the increasing demand for sustainable food solutions.