

# WASTE TO FOOD: MYCOPROTEIN CULTIVATION FROM RESIDUALS

## Abstract

The project transforms underutilized orange peel waste into a high-quality, sustainable protein source through an innovative, multi-stage fermentation process. Addressing global protein shortages and environmental challenges, this project integrates solid-state fermentation (to boost enzymes production), enzymatic hydrolysis (to liberate fermentable sugars), membrane separation (to recover sugars), and subsequent liquid fermentation (to cultivate robust fungal biomass). This fungal protein, or mycoprotein, offers a nutritious alternative to traditional animal and plant proteins while significantly reducing carbon emissions and waste. The project has shown promising enzyme activity and sugar yield, leading to enhanced protein production, making this food waste-valorizing process a potential contributor to circular economy.

- Mycoprotein is a high-quality product that is expected to make up for the protein shortages.
- Fruit and vegetable residuals are used as carbon sources to reduce waste.
- Mycoproteins are an excellent source of essential amino acids and have low-fat digestibility, high fibre, vitamins, and polyunsaturated fatty acids content.
- In-situ hydrolysis of fruit and vegetable residuals by enzymes produced from solid state fermentation are efficient and environmentally friendly.

## Novel Feed Stock Development From Fruit And Vegetable Waste For Mycoprotein Production



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Edible fungal strains

