PURDUE INNOVATES | Office of Technology Commercialization

Rapid plant protein extraction

A fluorescence-based assay accelerates the discovery and validation of new E3 ligase ligands for developing targeted protein degradation therapeutics like PROTACs.

On average, plant protein-based foods are 50-300% more expensive than their animal-based counterparts. Although improvements in formulation and processing are gradually reducing the price disparity, it remains a considerable challenge, particularly for individuals unfamiliar with plant proteins and their associated products. Researchers at Purdue University have developed rapid protein extraction with improved functionality and digestibility. Traditional alkaline extraction normally requires 1-2 hr, which is time consuming and limits the production volume. This technology shortens the extraction time to 5-10 min with continuous and large-scale production. It helps food ingredient companies who want to efficiently produce plant protein ingredient with better functionality and nutrition by hydrolyzing plant proteins and increases its water and digestive enzyme accessibility unlike traditional alkaline plant protein extraction. This technology is believed to have great potential in the food industry manufacturing process.

Technology Validation:

SDS-PAGE showed the molecular weight of extracted canola proteins decreased from 20-35 kDa to 10-23 kDa after reactive extrusion, demonstrating the effectiveness of Alcalase in degrading protein during extrusion.

Advantages:

-This technology is faster, more productive and the produced ingredient has better functionality and digestibility.

Applications:

-Food Ingredient company that has plant protein as their products, such as ADM, Ingredient, Cargill, Kerry Group, etc.

TRL: 4

Technology ID
2025-CHEN-71029

Category
Agriculture, Nutrition, & AgTech/Food Safety & Traceability
Biotechnology & Life Sciences/Biomarker Discovery & Diagnostics
Pharmaceuticals/Drug Discovery & Development
Chemicals & Advanced Materials/Materials Processing & Manufacturing Technologies

Authors
Da Chen

Further information
Raquel Peron
rperon@prf.org

View online

Intellectual Property:

Provisional-Patent, 2025-03-20, United States

Keywords: Fluorescence-based assay, E3 ligase, ligand identification, high-throughput screening, drug discovery, chemical biology, protein degradation, targeted protein degradation, assay development, novel screening methods, Biotechnology, Food and Nutrition, Rapid protein extraction