

Obtaining protein hydrolysates from vegetable by-products using HD Ultrasound-assisted protocols. RECUPERA

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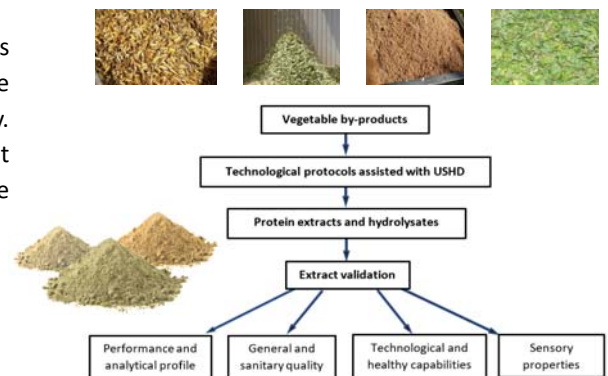
INTRODUCTION

One of the most common characteristics of all activities related to the transformation and processing of fruits and vegetables is the large amount of vegetal waste it generates. Between 15 and 60% of the processed raw material becomes vegetable waste and currently, and in general, it is not used from a commercial point of view. The use of resources in circular economy systems and the growing demand for new sources of vegetable proteins have led to a growing interest in the possibilities of using agri-food waste and its potential as a source of protein in high added value products. This project optimises sustainable extraction and purification protocols assisted by high-intensity ultrasound to obtain extracts rich in vegetable proteins and their transformation into protein hydrolysates in order to provide them with better properties for use in the food industry.

Plant	Vegetable byproduct	% Proteins w/w	Reference
oilseeds	Pumpkin seed	53,0	Prandi et al. (2019)
	Sesame flour	37,8	Demirhan y Özbek (2013)
	Tomato seed	27,5	Persia et al. (2003)
	Sesame bran	11,4	Görgüç et al. (2019)
Cereals	Oat bran	16,6	Talukder y Sharma (2010)
	Wheat bran	12,3	Schutysse et al. (2015)
	Rice bran	11,8	Kaur et al. (2012)
Fruits and vegetables	Tomato pomace	17,7	Palomo et al. (2019)
	Artichoke waste	15,2	Ruiz-Cano et al. (2014)
	Orange peel	6,5	López et al. (2010)
	Potato peel	1,8	Sepelev y Galoburda (2015)

Several studies show that protein extraction by ultrasound-assisted processes significantly increases the extraction yields. It also improves some properties of the proteins obtained such as foaming and emulsifying capacities and their solubility. Some health functionalities are also improved. These studies conclude that ultrasound-assisted extraction has a great potential for application in the vegetable protein industry.

METHODOLOGY



RESULTS

The RECUPERA project will obtain results related to several aspects of the protein extraction process and obtaining protein hydrolysates from plant waste of the agri-food industry, as well as their potential as a resource for the food and agricultural industry:

- ✓ We have specific and complete information on the nutritional composition of different vegetable waste and by-products from the agri-food industry.
- ✓ We work with a protocol based on a combination of ultrasound-assisted environmentally friendly technologies to obtain extracts and protein hydrolysates from different plant matrices.
- ✓ We will obtain specific knowledge about different properties and technological, nutritional and agronomic capacities of protein extracts and hydrolysates that will allow us to evaluate their potential for use in different industrial activities.



For any additional information regarding this project: www.ctnc.es, or National Technological Centre for the Food and Canning Industry CTNC. Calle Concordia s/n 30500 Molina de Segura, Murcia, Spain. Tel: +34 968389011 ctnc@ctnc.es