

<https://doi.org/10.7250/CONNECT.2023.063>

FUNGAL HYDROLYSIS OF FOOD WASTE: REVIEW OF USED SUBSTRATES, CONDITIONS, AND MICROORGANISMS

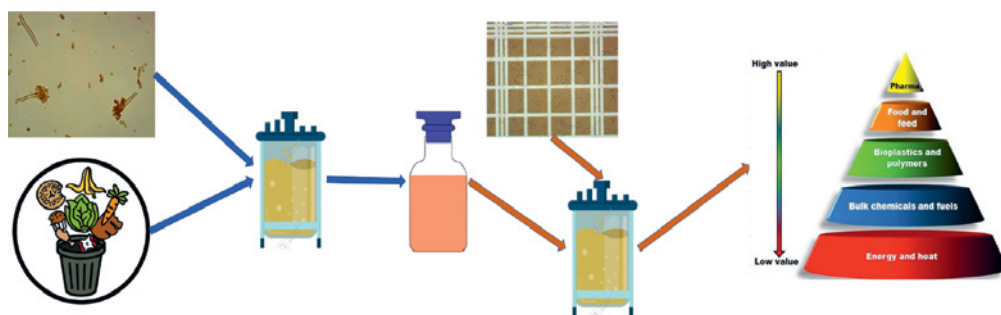
Indra BERZINA^{1*}, Kriss SPALVINS²

^{1,2} *Institute of Energy Systems and Environment, Riga Technical University, Āzenes iela 12/1, Riga, Latvia*

* **Corresponding author.** E-mail address: indrels98@gmail.com

Abstract – Food production generates significant amounts of organic waste that can have negative effects on the environment, such as water, soil and air pollution, due to lack of efficient utilisation solutions and insufficient disposal practices. Fungi have great enzyme-producing abilities that can be used for hydrolysing various types of food waste. Carried out in optimal conditions, fungal hydrolysis of generated food waste can be fast and efficient. Currently, fungal hydrolysis capacity for waste treatment has only been briefly demonstrated in previous studies. This review focuses on and summarizes different practises showing the potential of fungal hydrolysis for the use in efficient resource management. The main accent was put on what organisms and waste have been used in previously conducted studies. In addition, temperature, pH level and glucose recovery yields were reviewed. It was concluded that food waste can be efficiently hydrolysed and used as substrates for downstream production of value-added products. The optimal temperature for fungal hydrolysis is above 45 °C, and optimal pH level can differ depending on the process. The possibility of fungal strain optimization and creation of the enzyme-producing mutant, as well as the use of other GRAS fungi should be investigated. To explore a wider range of waste residues, researchers must collaborate with manufacturers to conduct tests and valorise new residues for fungal hydrolysis.

Keywords – *Biowaste; biological hydrolysis; by-products; enzymatic activity; fermentation; fungi; food waste; glucose recovery; microbial hydrolysis; mixed culture; waste biomass*



Two step fermentation diagram.