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EDIBLE BIOMASS PRODUCTION BY CO-CULTURE OF *ASPERGILLUS ORYZAE* AND *CANDIDA UTILIS* USING CORN-BASED THIN STILLAGE

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Industrial bioethanol production generates huge amounts of wastewater from distillation process called stillage which is fractionated into liquid (thin stillage) and solid (condensed distillers grains) fractions. Thin stillage contains all of the non-volatile components of the grain not utilized by the yeast (oligosaccharides, lipids, protein) as well as their metabolism by-products (i.e. glycerol, organic acids) and is, in part, recycled in the process (called backset). Those could be utilized by edible filamentous fungi to produce food/feed biomass, moreover application of edible yeast strain capable of fast utilization of inhibitory compounds (lactate, glycerol) may improve removal of some compounds which may accumulate and inhibit the fermentation. In this study, industrial grade corn-based thin stillage (9% w/v dry solids) was used as medium for production of edible *Aspergillus oryzae* in co-culture with fodder yeast *Candida utilis* inoculated after initial 24 h of fungal growth. The 72-h co-culture resulted in obtaining up to 18.6 g L⁻¹ biomass with crude

protein and lipid content of 0.31 and 0.41 g g⁻¹ respectively also containing all of the essential amino acids. Therefore, the biomass could be used as a high protein and energy, vegan foodstuff or animal feed additive. Additionally, the cultivation resulted in reduction of 33.9% of thin stillage solids, 33.4% glycerol and 12.5% lactic acid. Moreover, additional 4.5 g L⁻¹ ethanol was produced together with high amount of amylolytic enzymes (1.67 U mL⁻¹) which could be sent back to the process and positively contribute to its course and final production economics.

Biography

Dr. Witold Pietrzak has completed his MSc and PhD in Food Technology by Wroclaw University of Environmental and Life Sciences. He works as assistant at Department of Fermentation and Cereals Technology. He has published 12 papers in reputed journals.

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