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Microbial lipids production by batch culturing of oleaginous yeast using food processing wastes as the culture medium

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The aims of this research were to examine the feasibility of simultaneous reduction of COD, nitrogen and phosphate content, and microbial lipid production from food processing wastes. Use of food processing wastes for culturing the oleaginous yeast *Cryptococcus sp*. was studied with the purpose of microbial lipids production. Reducing sugar, protein, total phosphorus, total nitrogen and COD contents of the wastewater were 0.10 ± 0.01 mg / L, 0.19 ± 0.02 mg / L, 16.4 ± 0 mg / L, 0.02 ± 0% and 10600 mg/ L, respectively. Batch culture of *Cryptococcus sp*. in the medium containing 2-10% molasses as the carbon source and soybean residue as the nitrogen source found higher levels of biomass were obtained from the medium supplemented with 4% and 6% molasses, and soybean residue. Effect of carbon/nitrogen (C / N) ratio on the cell growth was investigated and 9.33 ± 0.12 g / L and 12.27 ± 1.21 g / L of dried cell biomass, and 63.2% and 57% of lipid content were achieved when the medium containing 4% molasses at a C / N ratio of 20 and 6% molasses at a C / N ratio of 10, respectively. In addition to lipid production, removals of COD, total soluble nitrogen and total soluble phosphorus up to 86% and 84%, 75% and 85% and 73% and 76%, respectively, were achieved in the abovementioned medium. In addition to microbial lipid production this treatment also offered an effective approach to remove nutrients from wastes.

Biography

Hung-Teh Chan has completed his PhD and Postdoctoral Studies from National Taiwan University, Taiwan. He now serves as a professor at the Department of Food Science in Yuanpei University of Medical Technology, Taiwan. His research interests lie in the domain of biofuels derived from microbial biomass and he has published many biofuels-related papers in reputed journals.

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