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Cost reduction for biodiesel production from distillery/domestic mixed wastewater by *Rhodospiridium toruloide*

Hojae Shim, Renata Alves de Toledo, Yuan Tian and Jiayin Ling
University of Macau, China

Many studies have been focusing on the production of microbial lipid to generate biodiesel from sterile wastewater while removing part of organic matters. Our previous study showed that lipids could be produced from non-sterile distillery wastewater using the increased initial cell density of oleaginous yeast *Rhodospiridium toruloide*s while generating lots of spent seed culture medium. This study explores the reuse potential of spent seed culture medium while saving resource and cost. When the medium was used for the 2nd and 3rd times without addition of extra nutrient, the biomass produced was around 3.17 and 2.65 g/L respectively. The cells produced in the 2nd time reused medium without extra nutrient showed similar performance to the fresh medium in lipid production (biomass 7.42±0.31 g/L, lipid yield 2.74±0.42 g/L and lipid content 36.90±4.36%) and removal efficiencies for organics and nutrients (chemical oxygen demand, total nitrogen and total phosphorus removal of 86.47±1.40%, 50.73±6.15% and 74.36±3.39% respectively) in non-sterile distillery and domestic mixed wastewater (1:1, v/v) after two-day cultivation. Around 30% reduction in the material cost for the medium preparation could be achieved by the spent medium reuse.

Biography

Hojae Shim is currently working as an Associate Professor in department of Civil Engineering at University of Macau, China. He completed his PhD in Environmental Science Engineering, Ohio State University, USA. His research interests includes Environmental Biotechnology, Biological Wastewater Treatment and Effluent Reuse, Biogas/Biodiesel Production from Waste/Wastewater, Bioremediation of Contaminated Environments, Bio filtration and Biodegradation/Biotransformation.

hjshim@umac.mo

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