Biodegradation of PAHs by indigenous strain from Yatsushiro Sea, Japan

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Polycyclic aromatic hydrocarbons (PAHs) are one class of organic pollutants belonging to the most hazardous environmental pollutants. PAHs were detected in sediment from Yatsushiro Sea, Japan with a mean concentration of 30,200 ng/g dry weight. Burkolderia fungorum sp. was isolated from soil collected on Yatsushiro sea using minimum medium (MM) inserted 100 mg/L of pyrene as a sole carbon and energy source. The strain showed evidence of nidA gene when colony polymerase chain reaction (PCR) was carried out using nidA-508F/R primer set, subsequently it was identified by 27F/518R primer sets to target 16S rRNA gene. PAHs degradation experiments were carried out by applying test tubes consisted of 2 mL of MM and supplemented PAHs with final concentration of 100 mg/L. For the estimation of PAHs residual concentration, solid-phase extraction (SPE) was chosen on the PAHs extraction method where the tube samples were extracted by using C18 cartridge prior to be injected to the HPLC. The isolated strain could degrade high molecular weight PAHs for 16 days incubation period, especially pyrene and fluoranthene at 95.66% and 34.31%, respectively.

Biography

Raden Darmawan is a doctoral student at Graduate School of Science and Technology, Kumamoto University, Japan. He is registered as a staff at Chemical Engineering Department, Institut Teknologi Sepuluh Nopember (ITS), Indonesia. His research interest includes isolation and evaluation PAHs degrading bacteria from polluted coastal environment. Furthermore, he is doing laboratories experiment to determine the ability of strains to degrade four aromatic benzene rings (pyrene and fluoranthene) by using HPLC method.

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