

Analisis kemampuan bacillus subtilis inacc b289 dan pseudomonas aeruginosa inacc b290 kultur tunggal serta campuran dalam degradasi hidrokarbon minyak solar = Capability analysis of bacillus subtilis inacc b289 and pseudomonas aeruginosa inacc b290 in single and mixed cultures for hydrocarbons degradation of diesel oil

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Abstrak

ABSTRAK

Tingkat mobilitas yang tinggi berdampak pada penggunaan minyak solar sebagai sumber bahan bakar kendaraan semakin meningkat. Proses produksi dan pengolahan minyak solar berpotensi menyebabkan pencemaran lingkungan. Pencemaran minyak solar dalam konsentrasi rendah maupun tinggi dapat menimbulkan masalah lingkungan. Biodegradasi merupakan salah-satu upaya mengendalikan pencemaran minyak solar dengan memanfaatkan bakteri sebagai agen pendegradasi senyawa hidrokarbon. Bacillus subtilis dan Pseudomonas aeruginosa telah diketahui mempunyai kemampuan mendegradasi minyak solar. Penelitian bertujuan untuk mengetahui kemampuan kultur tunggal dan campuran Bacillus subtilis InaCC B289 serta Pseudomonas aeruginosa InaCC B290 untuk mendegradasi senyawa hidrokarbon dalam minyak solar. Parameter yang diukur yaitu pH, Optical Density DO dan Dissolved Oxygen DO selama 25 hari. Hasil pengukuran pH, Optical Density DO dan Dissolved Oxygen DO tidak berbeda nyata $P > 0,05$. Persentase penurunan total hidrokarbon dianalisis menggunakan GC-MS menunjukkan kultur campuran mampu mendegradasi hidrokarbon lebih besar 57,56 dibandingkan kultur tunggal Bacillus subtilis InaCC B289 37,53 dan kultur tunggal Pseudomonas aeruginosa InaCC B290 36,50.

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ABSTRACT

High levels of mobility affect the use of diesel oil as a fuel source of vehicles is increasing. The production process of diesel oil has the potential to cause pollution. Diesel oil pollution with low or high concentrations caused environmental problems. Biodegradation is an effort to control the pollution of diesel oil by utilizing bacteria as degradation agent of hydrocarbon compound. Bacillus subtilis and Pseudomonas aeruginosa are known to have the ability to degrade diesel oil. The objective of the study is to investigate the ability single and mixed cultures of Bacillus subtilis InaCC B289 and Pseudomonas aeruginosa InaCC B290 to degrade hydrocarbon compounds in diesel oil. Parameters measured were pH, absorbance Optical Density and Dissolved Oxygen DO for 25 days. The results of pH measurements, Optical Density DO and Dissolved Oxygen DO were not significantly different $P > 0,05$. The percentage of degradation was analyzed using Gas Chromatography ndash Mass Spectrometry GC MS showed that degradation of hydrocarbon compounds in diesel oil with mixed cultures Bacillus subtilis InaCC B289 and Pseudomonas aeruginosa InaCC B290 was higher 57,56 than single culture of Bacillus subtilis InaCC B289 37,53 and single culture of Pseudomonas aeruginosa InaCC B290 36,50.