Biodegradasi naftalena oleh Pseudomonas aeruginosa DRK 9.1 asal lumpur vulkanis di Desa Renokenongo, Kabupaten Sidoarjo = Biodegradation of naphthalene by pseudomonas aeruginosa DRK 9.1 isolated from volcanic mud in Renokenongo Village, Sidoarjo Regency

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Abstrak

Naftalena merupakan salah satu hidrokarbon polisiklik aromatik (HAP) yang menyusun bahan bakar fosil. Degradasi senyawa tersebut di alam sebagian besar terjadi melalui aktivitas mikroorganisme tanah. Mikroorganisme tersebut dapat ditemukan di lokasi yang tercemar minyak bumi seperti lumpur vulkanik akibat kegiatan pengeboran PT Lapindo Brantas di Desa Renokenongo Kabupaten Sidoarjo. Penelitian dilakukan untuk mengetahui biodegradabilitas naftalena oleh bakteri Pseudomonas aeruginosa DRK 9.1 yang diisolasi dari lumpur vulkanik di Desa Renokenongo. Pseudomonas aeruginosa DRK 9.1 ditanam pada media Bushnell-Haas dengan penambahan 0,02% (b / v) naftalen sebagai sumber karbon tunggal. Pertumbuhan bakteri ditentukan menggunakan metode Total Plate Number (ALT) dan degradasi naftalena ditentukan menggunakan metode Kromatografi Cair Kinerja Tinggi (HPLC). Hasil penelitian menunjukkan bahwa setelah 96 jam inkubasi jumlah sel meningkat dari 3,96 x 109 CFU / mL menjadi 3,08 x 1010 CFU / mL dan konsentrasi naftalen menurun sebesar 70,87%.

.....Naphthalene is one of the polycyclic aromatic hydrocarbons (HAP) that make up fossil fuels. Most of the degradation of these compounds in nature occurs through the activity of soil microorganisms. These microorganisms can be found in locations contaminated with petroleum such as volcanic mud due to drilling activities of PT Lapindo Brantas in Renokenongo Village, Sidoarjo Regency. The study was conducted to determine the biodegradability of naphthalene by Pseudomonas aeruginosa DRK 9.1 which was isolated from volcanic mud in Renokenongo Village. Pseudomonas aeruginosa DRK 9.1 was grown on Bushnell-Haas media with the addition of 0.02% (w / v) naphthalene as the sole carbon source. Bacterial growth was determined using the Total Plate Number (ALT) method and naphthalene degradation was determined using the High Performance Liquid Chromatography (HPLC) method. The results showed that after 96 hours of incubation the number of cells increased from 3.96 x 109 CFU / mL to 3.08 x 1010 CFU / mL and the concentration of naphthalene decreased by 70.87%.