Analisis kemampuan biodegradasi hidrokarbon isolat bakteri SM1_7 dari habitat mangrove = Analysis of hydrocarbon biodegradation ability of bacteria isolate SM1_7 from mangrove habitat

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Abstrak

Bakteri pendegradasi senyawa hidrokarbon dapat diisolasi dari daerah yang terkontaminasi polutan, seperti habitat mangrove. Isolat bakteri SM1_7 telah diisolasi dari habitat mangrove Suaka Margasatwa Muara Angke, Jakarta Utara. Penelitian bertujuan untuk menganalisis kemampuan degradasi senyawa hidrokarbon dan mengarakterisasi isolat bakteri SM1_7. Pengukuran pertumbuhan dilakukan dengan metode viable plate count dan analisis senyawa hidrokarbon dengan GC/MS. Karakterisasi bakteri dilakukan dengan pengecatan Gram, pengamatan morfologi, dan karakterisasi biokimia.
Hasil pengukuran pertumbuhan menunjukkan bahwa isolat bakteri SM1_7 mampu tumbuh di medium Bushnell Haas + 1% (v/v) minyak diesel yang menunjukkan peningkatan 2,3x109 CFU/mL menjadi 3,31x1011 CFU/mL setelah inkubasi 12 jam. Isolat bakteri SM1_7 mampu mendegradasi senyawa hexadecane (C16H35) sebanyak 13,95%, heptadecane (C17H36) sebanyak 17,66%, dan eicosane (C20H42) sebanyak 19,14%. Hasil karakterisasi fenotipik bakteri menunjukkan bahwa isolat bakteri SM1_7 diduga termasuk ke dalam genus Pseudomonas.
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Hydrocarbon degrading bacteria can be isolated from contaminated areas, such as mangrove. Bacteria isolate SM1_7 has been isolated from mangrove habitat Suaka Margasatwa Muara Angke, North Jakarta. The objectives of the research is to analyze the capability of isolate SM1_7 for degrading hydrocarbons and characterize bacterial isolate SM1_7. Growth measurements was performed using viable plate count method and analysis of hydrocarbon degradation was carried out using GC/MS. Bacterial characterization was done using Gram stains, observing morphological characteristics, and analysis of biochemical characteristics.
The results show that bacteria isolate SM1_7 is able to grow in Bushnell Haas medium + 1% (v/v) diesel oil displaying an increase from 2,3x109 CFU/mL to 3,31x1011 CFU/mL after 12 hours incubation. Bacteria isolate SM1_7 is able to degrade hexadecane (C16H35) 13,95%, heptadecane (C17H36) 17,66%, and eicosane (C20H42) 19,14%. The result of phenotypic characterization showed that bacteria isolate SM1_7 is assumed to be from genus Pseudomonas.