Isolation of Staphylococcus Nepalensis for Degradation of Pyrene from Diesel Contaminated Site

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Abstract
Pyrene is a relatively persistent 4-ring polyaromatic hydrocarbon (PAH) pollutant, and is often used as a model substrate in studies pertaining to high molecular weight PAH degradation. For degradation of pyrene, Staphylococcus nepalensis was isolated from diesel contaminated soil sample and it was tolerant to 50mgL-1 of pyrene. In 16S rRNA gene sequence Staphylococcus sp. showed 96% sequence similarity with Staphylococcus nepalensis. For efficient degradation of pyrene, various parameters such as pH, temperature and contact time were optimized. In order to enhance the degradation rates of pyrene, carbon sources such as glucose and sucrose at different concentration were also evaluated. Staphylococcus nepalensis showed maximum degradation of pyrene at pH 8 and temperature at 30°C within 5 days of incubation. The excellent bacterial growth and efficient pyrene removal was more when enriched with carbon co-substrates (glucose 4%, sucrose 2%).

References

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Index Terms

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Bioinformatics

Keywords

Pyrene  Staphylococcus Nepalensis  Biodegradation  Co-substrate.