

## Biodegradation Mechanism of Phenanthrene by Halophilic *Hortaea* sp. B15

Risky Ayu Kristanti<sup>a</sup>; Tony Hadibarata<sup>b</sup>; Dunia A. Al Farraj<sup>c</sup>; Mohamed Soliman Elshikh<sup>c</sup>;  
Roua M. Alkufeidy<sup>c</sup>

<sup>a</sup>Faculty of Engineering TechnologyUniversiti Malaysia PahangGambangMalaysia

<sup>b</sup>Department of Environmental Engineering, Faculty of Engineering and ScienceCurtin  
UniversityMiriMalaysia

<sup>c</sup>Botany and Microbiology Department, College of ScienceKing Saud UniversityRiyadhSaudi  
Arabia

### ABSTRACT

This aim of the study is to investigate a halophilic bacterium *Hortaea* sp. B15, isolated from petroleum-contaminated soil for biodegradation of phenanthrene. *Hortaea* sp. B15 has the ability to completely degrade phenanthrene (100 mg/L) under salinity 10% within 1-week incubation. The metabolic product of phenanthrene was identified and assayed by using ultraviolet-visible spectrophotometer and mass spectral analysis. Result revealed that *Hortaeasp.* B15 metabolized phenanthrene to form 9,10-phenanthrene quinone, salicylic acid, and gentisic acid. *Hortaea* sp. B15 has an efficient utilization of phenanthrene in high-saline liquid medium. All the results indicated that the fungus has a promising application for the study of high-molecular-weight PAH biodegradation and contaminated saline-alkali soil bioremediation.

### KEYWORDS:

*Hortaea* sp. B15; Phenanthrene; Biotransformation; Metabolites