

研究报告

一株高效菲降解菌的筛选及降解条件研究

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摘要

从南京某石化厂排污口附近采集土样, 以菲为碳源的选择性培养基分离筛选到一株菲高效降解菌F10a, 根据形态和生理生化特性初步鉴定为芽孢杆菌属, 并对其降解菲的特性及各种影响因素进行了研究. 结果表明, F10a在50 mg·L⁻¹的条件下, 28 ℃振荡培养27 h, 菲降解率达到98.12%; 静置培养84 h, 菲的降解率达到98.47%. pH值分别为4、6、8时, F10a对菲具有良好的降解效能; pH值为10时F10a不生长. Zn²⁺与Pb²⁺的存在不影响F10a的降解效能, Cu²⁺可以延缓菲的降解, Cr²⁺对F10a有毒性. F10a在菲浓度为200 mg·L⁻¹时, 28 ℃振荡培养84 h, 降解率为99.6%. 菲的降解程度与细菌数量的增长呈正相关关系.

关键词 [降解; 菲; 多环芳烃; 芽孢杆菌](#)

分类号

Screening of a phenanthrene-degrading bacterium and its degradation conditions

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Abstract

Several PAHs-degrading bacteria were isolated from the soil near a petrochemicals factory, and one strain F10a identified as *B. sphaericus* was chosen for use. The study on the phenanthrene-degradation potential of the strain and its affecting factors showed that at 28 ℃, the degradation rate of phenanthrene (50 mg·L⁻¹) was 98.12% after 27 hours rotary culture, and 98.47% after 84 hours static culture. F10a had a good phenanthrene degradation capability when the pH was 4, 6 and 8, but its growth was inhibited when pH was 10. Cr²⁺ was toxic to the strain, Cu²⁺ could delay the degradation of phenanthrene, while Zn²⁺ and Pb²⁺ had no significant effects. The degradation rate of phenanthrene (200 mg·L⁻¹) was 99.6% after 84 hours rotary culture. A significant positive relationship was found between bacterial growth and phenanthrene degradation.

Key words [Degradation](#) [Phenanthrene](#) [Polycyclic aromatic hydrocarbons](#) [B. sphaericus](#)

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