

Biodegradation of pyrene by *Candida* sp. S1 under high salinity conditions

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Received: 19 April 2017 / Accepted: 6 June 2017 / Published online: 13 June 2017
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Abstract Polycyclic aromatic hydrocarbon is a toxic recalcitrant environmental pollutant and its removal from the environment is very essential. In this study, a novel S1 strain isolated from the tropical rain forest was identified as *Candida* species based on 18S rRNA. The pyrene biodegradation was performed by *Candida* sp. S1. Pyrene was 35% degraded in 15 days. The percentage of pyrene biodegradation increased up to 75% with 24 g L⁻¹ of sodium chloride and decreased along with increasing salinity. Under the acidic condition, the biodegradation was increased up to 60% at pH 5. It was also found that the increasing glucose concentration of more than 10 g L⁻¹ had no significant effect on pyrene biodegradation, while agitation proved to have greater influence. There was a positive relationship between biomass growth and biodegradation rate of pyrene. One pyrene metabolite was identified from the extract solution and analyzed by a thin-layer chromatography, UV-visible absorption and gas chromatography–mass spectrometry. The metabolite found in the pyrene degradation was benzoic acid.

Suitable conditions must be found to promote a successful microbial augmentation in liquid culture.

Keywords *Candida* sp. S1 · Pyrene biodegradation · Metabolite identification · Salinity

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