

Characterization of phenol-degrading fungi isolated from industrial waste water in Malaysia

ABSTRACT

Microorganisms have the ability to degrade phenol. However, in Malaysia, there are lack of study on indigenous microorganisms (fungi) that have the ability to degrade phenol. A total of 141 phenoldegrading fungi isolates were isolated from soil and water samples collected from various industrial areas located in Malaysia. The fungi isolate N12 P6C3 was chosen based on its high efficiency in degrading phenol. The fungi isolate N12 P6C3 isolated from a heavy metal factory, Dungun, Terengganu was able to degrade 700 mg/L of phenol within 6 days and the mycelium growth had increased to 0.25 g. The phylogenetic tree based on the ITS sequence analysis confirmed that the fungal identity was closely related to *Penicillium janthinellum* strain ATCC 4845. The optimum conditions of this fungus to degrade phenol was attained at temperature of 35°C, ammonium sulphate at 3 g/L, 0.05 g/L of sodium chloride, and pH 6. The ability of *P. janthinellum* strain N12 P6C3 in the degradation of phenol may provide additional knowledge on locally isolated phenol-degrading fungi which could contribute towards phenol waste management in Malaysia.

Keyword: Biodegradation; Fungi; Phenol