

**Isolation, identification and characterization of elevated phenol degrading
Acinetobacter sp. Strain AQ5NOL 1**

ABSTRACT

The increasing phenol and phenolic wastes necessitates the screening of bacteria that are able to degrade phenol. 115 bacterial isolates from several industrial sites and farms in Malaysia were screened for phenol degrading activity in minimal salt media (MSM) containing 0.5 gL⁻¹ phenol. Thirty seven bacterial isolates exhibited phenol degrading activity and of this total, 6 isolates showed high phenol activity after 8 days of incubation. The isolate with the highest phenol degrading activity was subsequently identified as *Acinetobacter* sp. Strain AQ5NOL 1 based on BiologTM GN plates and partial 16S rDNA molecular phylogeny. The optimum conditions for achieving high phenol degradation were 0.04% (w/v) (NH₄)₂SO₄, 0.01% (w/v) NaCl, pH 7, and temperature of 30°C. *Acinetobacter* sp. Strain AQ5NOL 1 was found to degrade phenol of up to 1500 mgL⁻¹ concentrations under the optimized conditions. The isolation of *Acinetobacter* sp Strain AQ5NOL 1 provides an alternative for the bioremediation of phenol and phenolic wastes.

Keyword: Isolation; Characterization; Elevated phenol degrading activity; *Acinetobacter* sp.