

Phenol removal by newly isolated *Acinetobacter baumannii* strain Serdang 1 in a packed-bed column reactor

ABSTRACT

Newly isolated *Acinetobacter baumannii* strain Serdang 1 was explored for its potential in phenol remediation in batch and continuous system. An immobilization cell system has been successfully developed to remove phenol in a batch system as high as 2,000 mg/L in 12 d at a rate of 6.04 mg/L/h. Repeated use of immobilized cells as many as five cycles was shown without any loss of activity. The continuous system in a packed-bed reactor achieved 65–77% phenol removal at the rate of 38.4 mg/L/h for 200 mg/L influent, which was almost three fold higher than the batch system. Low influent flow rate at 1.5 mL/min and bed height-to-diameter ratio of 15.2 reached steady state faster than the higher flow rate, and the percentage of phenol removal was also higher.

Keyword: *Acinetobacter baumannii*; Phenol; Bioremediation; Packed-bed column reactor