

Characterization of a molybdenum-reducing *Acinetobacter baumannii* strain Serdang 1 with the capacity to grow on phenol and acrylamide

ABSTRACT

Contamination of organic xenobiotic pollutants and heavy metals in a contaminated site allows the use of multiple bacterial degraders or bacteria with the ability to detoxify numerous toxicants at the same time. A previously isolated SDS- degrading bacterium, *Acinetobacter baumannii* strain Serdang 1 was shown to reduce molybdenum to molybdenum-blue. The bacterium works optimally at pH 6.5, the temperature range between 25 and 34°C with glucose serves as the best electron donor for molybdate reduction. This bacterium required additional concentration of phosphate at 5.0 mM and molybdate between 15 and 25 mM. The absorption spectrum of the molybdenum blue obtained is similar to the molybdenum blue from other earlier reported molybdate reducing bacteria, as it resembles a reduced phosphomolybdate closely. Ag(i), As(v), Pb(ii) and Cu(ii) inhibited molybdenum reduction by 57.3, 36.8, 27.7 and 10.9%, respectively, at 1 p.p.m. Acrylamide was efficiently shown to support molybdenum reduction at a lower efficiency than glucose. Phenol, acrylamide and propionamide could support the growth of this bacterium independently of molybdenum reduction. This bacterium capability to detoxify several toxicants is an important tool for bioremediation in the tropical region.

Keyword: *Acinetobacter baumannii*; Molybdenum; Molybdenum blue; Phenol-degrading; Acrylamide-degrading