

## Bioremoval of molybdenum from aqueous solution

### ABSTRACT

Molybdenum is very toxic to ruminants with level as low as 2 parts per million can cause severe scouring. Its contamination of waters and soils in agricultural areas needs novel removal technology. In this work we demonstrated a novel method of molybdenum removal from aqueous solution using the dialysis tubing method coupled with molybdenum-reducing activity of *Serratia* sp. strain Dry5. The enzymatic reduction of molybdenum is molybdenum blue, a colloid that does not pass through dialysis tubing. The calculated maximal rate of molybdenum blue production (VMoblueMax) was  $0.264 \pm 0.034$  mM (Mo-blue h)<sup>-1</sup> and the concentration of molybdate resulting in the half-maximal rate of reduction (KMo) was  $21.78 \pm 3.89$  mM molybdate and the specific maximal rate of Mo-blue production was approximately 80 mM (Mo-blue.hr.mg cells)<sup>-1</sup> indicating an efficient system with high tolerance towards molybdenum.

**Keyword:** Agriculture; Dialysis tubing; Molybdenum; Molybdenum blue; *Serratia* sp.