

Resistance capability of indigenous and non-indigenous bacteria species on 3,4-dichloroaniline

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Abstract

3,4-dichloroaniline (3,4-DCA) is commonly used in the chemical industry and it is also a by-product of aniline-derived herbicides such as diuron, linuron and propanil. However, 3,4-DCA exhibits higher toxicity than its parent compound and is persistent in soils, water and groundwater. The aim of the study was to investigate three TBT-resistant bacteria which are *Klebsiella* sp., *Acinetobacter* sp., and *Citrobacter* sp. to evaluate their resistance towards 3,4-DCA. *Pseudomonas* sp. isolated from a non-TBT-polluted area was used as a positive control. Respiratory inhibitory activity of 3,4-DCA on three bacterial strains was assessed by employing MTT-bioassay. Results showed that *Citrobacter* sp. is the most tolerant bacteria among the three strains with an IC₅₀ value of 7.83 mg/L, followed by *Acinetobacter* sp. (7.55 mg/L), *Klebsiella* sp. (7.09 mg/L) and *Pseudomonas* sp. (7.02 mg/L). Due to that, potential TBT-degrading bacteria, *Klebsiella* sp. is not a preferable bacteria to degrade or utilize 3,4-DCA mainly because of its structure and resistance to the bacteria itself. Thus, future studies are recommended in order to remediate this highly persistent compound in solving environmental problems associated with contamination.

Keywords: Biocides, 3,4-dichloroaniline, LC₅₀, MTT bioassay, resistant bacteria.

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