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**Screening of Cd, Cr and Zn Tolerant Bacteria in the Rhizosphere of *Amaranthus viridis***

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**Abstract**

Environmental pollution is one of the most conspicuous problems in the world. The heavy metal pollution causes adverse impacts on lives of human, animal, microorganisms and the environment. Thus, these heavy metals must eliminate from contaminated soil. This study aimed on removal of Cd, Cr and Zn from the contaminated soil by bacteriological methods. The rhizosphere of *Amaranthus viridis* plant grown in the unsanitary landfill of Badulla city was used to isolate the bacterial species by using Nutrient Agar medium. The Cd, Cr and Zn separately incorporated into NA plates with the concentrations of 25, 50 and 100 ppm, respectively and plates were inoculated by isolated cultures. The growth of cultures against the respective metals was examined. The assay was conducted in triplicates by following completely randomized design. The bacterial strains that resist the particular heavy metals were selected and further studied for heavy metal tolerance by analysing the changes of heavy metal concentration in culture plates by Atomic Absorbance Spectrophotometry (AAS). According to the results, 11 bacterial species (B1-B11) showed the growth in heavy metal incorporated plates. The majority of species had grown well in plates containing 25 ppm of heavy metals. AAS analysis showed the reduction of heavy metal concentration in inoculated culture plates. The highly declined Cd concentration was observed in plates with B4 and B5 in comparison to other bacterial cultures and the control, though the differences were not significant ( $p>0.05$ ). Cultures B3 and B6 showed the highest decline of Cr concentration in culture medium. Overall results showed that all bacterial strains could reduce the concentrations of incorporated Cd, Cr and Zn in the media. Therefore, based on the bio remediation capacity, growing of *A. viridis* can be recommended as a remedial measure for heavy metal contaminated sites. The heavy metal tolerance bacterial species of the present study are yet to be identified.

**Keywords:** *Amaranthus viridis*, Rhizosphere, Bacteria, Heavy metals