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In-vitro evaluation of heavy metal tolerance and biosorptive potential of two native strains of *Bacillus cereus* against Nickel and Cobalt

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Heavy metal contamination is a major global environmental issue and industrial effluents are commonly used for irrigation. Increasing industrial rate in the modern world is responsible for the increase in the concentration of these heavy metals. The present study was designed to isolate and evaluate some indigenous heavy metal tolerant bacteria from textile effluents of Faisalabad Pakistan. Out of 30 positive samples, two isolates were selected showing maximum tolerable concentration and multi-metal resistance to Ni and Co and were named AMIC2 and AMIC3. Molecular characterization confirmed AMIC2 as (*Bacillus cereus*, accession number LT838345) and AMIC3 as *(B. cereus*, LT838346). Biosorptive potential was accessed using Inductively Coupled Plasma-Optical Emission Spectroscopy and it was found that AMIC2 reduced Ni (48.4%, 49%) and Co (70.6%, 73.6%) after 24 and 48 hours respectively whereas AMIC3 reduced Ni (50.6%, 51.8%) and Co (71.8%, 73.2%) after 24 and 48 hours respectively. Fourier transform infrared spectroscopy was used to analyze the functional groups and overall nature of chemical bonds in isolates while Scanning Electron Microscope was performed to detect outer morphological changes in bacteria in response to metal stress. Results suggested that bacteria possessed significant biosorptive potential and may be used for the development of bioremediation agent in future.

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