D-18 Heavy metal tolerance of bacteria isolated from textile waste

W A V R Wanniarachchi, D M Sirisena
(*Dept. of Botany, Univ. of Kelaniya*)

Bacteria play a significant role in the removal of heavy metal ions from water polluted with industrial wastes. An essential feature of such bacterial species is their ability to tolarate heavy metal ions. Textile industry is one of the major sources of adding heavy metal ions containing discharges to the environment.

A study was carried out to isolate and identify heavy metal resistant bacteria in 2 streams and a well, contaminated with waste from the textile factory at Veyangoda. Eight different bacterial strains were isolated based on their ability to grow in the presence of heavy metal ions Pb^{2+} Cr^{6+} and Cu^{2+}. Six of them belong to the genus *Bacillus* and 4 of these strains were resistant to all the tested heavy metals whereas the other 2 strains were able to resist only Cr^{6+} and Pb^{2+}. All the strains except one were able to tolerate up to 1490 ìg/ml of Pb^{2+} in the growth medium. For Cr^{6+} and Cu^{2+} their resistance levels were 214 to 268 µg/ml and from 0 to 318 µg/ml respectively. A *Pseudomonas* sp. and an *Enterobacter* sp. were the 2 prominent gram negative strains which were resistant to these 3 heavy metal ions. Their Cr^{6+}, Pb^{2+} and Cu^{2+} resistance levels were 268, 398 and 1490 µg/ml respectively.

Another important characteristic of these bacterial strains is their ability to survive in the presence of relatively high levels of antibiotics. Every *Bacillus* strain was able to tolarate ampicillin to concentrations within the range of 25-800 µg/ml. Both gram negative bacterial species were also tolerant to a relatively high concentration of ampicillin. High levels of heavy metal tolerence associated with low sensitivity for antibiotics of these bacterial strains suggests the presence of plasmids with required genes for their survival in the presence of heavy metal ions.