

ABSTRACT

The present study deals with the ribotyping of heavy metal resistant bacteria isolated from leather industry effluents collected from Latif Tanneries Sahiwal. Different morphological and biochemical tests were performed for the identification of bacteria present in samples. Minimum inhibitory concentration of isolated bacterial strains against heavy metals (Zn, Cu, Pb, and Ag) was checked. Five heavy metal resistant bacterial strains were identified as *Bacillus thuringensis*, *Bacillus substils*, *Bacillus anthracis*, *Bacillus sonorenis* and *Bacillus tequilensis*. Blood agar test was used to classify some fastidious bacterial strains. Antibiotic susceptibility of these strains was checked against rifampicin, cephalixin, augmentin, amikacin, voriconazole, and fluconazole. *Bacillus thuringensis*, *Bacillus substils*, *Bacillus anthracis*, *Bacillus sonorenis* and *Bacillus tequilensis* were resistant against fluconazole, voriconazole and augmentin while these were sensitive against rifampicin, cephalixin, amikacin. Antibacterial activity of nano particles of ZnO and Pb were checked and *Bacillus sonorensis* and *Bacillus substils* were found sensitive to ZnO while *Bacillus tequilensis*, *Bacillus thuringeinis*, and *Bacillus anthracis* were identified as resistant against ZnO activity. Bacteriocine effect of wild *Lactobacillus* sp. was also found to be resistant and mutant species were identified as sensitive species.

It was observed that *Bacillus* species can be potential candidates for bioremediation purposes.