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Isolation and Identification of Pesticides and Heavy Metals Degrading Bacteria and Fungi from Contaminated Soil of Peach Orhards in District Swat

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Abstract

The current study screens heavy metal-contaminated soil of peach orchards in district swat for the presence of soil microbial flora. The sampling was random and performed in 20 different locations. In the preliminary screening, different bacterial and fungal isolates were identified. Bacterial isolates were identified based on the morphological features of culture, gram staining, and biochemical tests. Fungal isolates were studied and identified on morphological features. A total of eleven different types of bacterial isolates were identified with different frequencies of occurrence. Highest frequency of occurrence was noted for the genus *Bacillus (*26.5%) followed by *Streptomyces* (22.44 %,). The lowest frequency of occurrence was shown by both *E.coli* and *Staphylococci* (2.04%). On the other hand, fungal isolates of seven different genera were also recovered with different frequencies of occurrence from heavy metal-contaminated soil of peach orchards. The species of genus *Aspergillus* and *Trichoderma* showed the same and high frequency of occurrence (19.6%) followed by *Geotrichum* spp (17.64%). The most dominant genera among fungi were Aspergillus spp., Trichoderma spp., Geotrichum spp., and Fusarium spp., accounting for approximately 72% of all fungal isolates. The effects of pH and temperature on the growth of the selected microorganisms were investigated. Bacterial isolates showed maximum growth in slightly acidic to neutral environments with an optimum temperature range from 30 to 40°C .

***Keywords**:*