عنوان مقاله:

Isolation and Molecular Identification of Heavy Metal Resistant Bacteria from Khoshk River in Shiraz, Iran

محل انتشار:

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خلاصه مقاله:

Heavy metal release is a serious threat to public health because of its persistence in the environment. One of the best ways to remove heavy metals is to use resistant bacteria to metals. The current study was aimed to isolate and identify heavy metal resistant bacteria from the wastes of the Khoshk River in Shiraz, Iran. First, water and sediment samples were collected from stations which had the highest prospect of entering hospital and industrial wastewater in the Khoshk River. The six isolates were selected based on heavy metal resistance. Isolates were identified by morphological and biochemical characteristics and ۱۶S rRNA gene sequencing. The minimal inhibitory concentration for isolates against cadmium, nickel, cobalt, mercury, chromium, zinc, iron and lead was determined. These isolates included Staphylococcus epidermidis (R۱), Bacillus subtilis (R۲), Escherichia coli (R۳), Pseudomonas aeruginosa (R۴), Proteus mirabilis (R۵) and Proteus vulgaris (R۶). Pseudomonas aeruginosa, Proteus mirabilis, Proteus vulgaris, Escherichia coli and Bacillus subtilis were shown the highest resistance to mercury and lead. Also, all isolates were resistance to antibiotics Tetracycline and Streptomycin. Therefore, co-resistance of bacteria to both antibiotic and heavy metals was detected in the strains isolated from Khoshk River in Shiraz. The resistance of bacteria against heavy metals may offer a beneficial tool for monitoring of many pollutants in the environment. Thus, these bacterial isolates can be used for the remediation of metals from the natural ecosystems in Iran.

کلمات کلیدی:

Heavy metals, Khoshk river, Resistant bacteria, ۱۶S rRNA, فلزات سنگین, رودخانه خشک, باکتری های مقاوم, ۱۶S rRNA