

## عنوان مقاله:

Heavy Metal Resistance Ability of Pseudomonas Species Isolated from Sludge and Sewage in Iraq

## محل انتشار:

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## خلاصه مقاله:

It has been well documented that one of the best ways to remediate water and soil heavy metal pollution would be the use of microorganisms able to absorb heavy metals. The ability to resist toxic and heavy metals has been developed in some bacteria and microorganisms. This study, therefore, aimed to test the resistance ability of Pseudomonas species (spp.) isolated from sludge and sewage in Iraq against heavy metals, including mercury (Hg), copper (Cu), nickel (Ni), and cadmium (Cd) with a minimal concentration of 50 µg/ml for each. Water and soil samples were collected from different locations in Iraq. To test the tubes, 1 ml of each water sample, 1 gm of each soil sample, and 9 ml of sterilized distilled water were added and mixed thoroughly, followed by serial dilutions for each test tube separately. A total of 100 µl of aliquots from the appropriate dilution (10<sup>-2</sup>) were also cultured on nutrient agar plates and then incubated at 37°C for 18 h. Different colonies from both water and soil samples were selected and grown on king A and king B media plates to confirm that these types of bacteria belong to the Pseudomonas genus. The isolates were identified based on their staining ability, shape, color, size, production of pigments, transparency, and mucoid properties of colonies growing on nutrient agar plates. In addition, some other biochemical tests were conducted. Several colonies were obtained and selected from the cultured samples and consequently, cultured and purified as a single colony. The preliminary observation and biochemical identification of these isolates indicated that two of them belonged to Pseudomonas spp.: Ps-1(M<sup>9</sup>) and Ps-2(M<sup>19</sup>). The screening of the bacteria isolates for resistance against Cu (II), Hg (II), Cd (II), and Ni (II) was performed by the use of Minimum Inhibitory Concentration. During the experiment and screening, different metal levels were evaluated to choose the best bacterial isolates with the ability of normal growth and resistance against heavy metal toxicity. The recorded data showed that two Pseudomonas isolates could tolerate heavy metal concentrations ranging from 50 to 180 µg/ml. Additionally, the two resistant Pseudomonas isolates also showed resistance to some antibiotics.

## کلمات کلیدی:

Heavy metal, Isolation, Pseudomonas spp, resistance

## لینک ثابت مقاله در پایگاه سیویلیکا:

