عنوان مقاله:

Arsenic bioremediation by Lactobacillus acidophilus from water in weightlessness condition

محل انتشار:

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خلاصه مقاله:

The pollution of water with heavy metal ions has generated great concern for public health due to the high toxicity, persistence, and non-degradability. Arsenic has been added to the list of heavy metals due to its carcinogenicity and toxicity. There is an emerging trend of employing microorganism's bioremediation of heavy metals, due to several benefits including their ability to heavy metal binding and arresting. Earth gravity is an influential physical force under which life appeared and developed. There are several reports about the effect of gravity removal on some characteristics of living organisms, including microorganisms. In this study bioremediation ability ofLactobacillus acidophilus for arsenic ions in water was evaluated. In addition, the effect of thermal and alkaline pretreatment of L. acidophilus on the amount of metalbioremediation was also investigated. Furthermore, simulated gastrointestinal effects were evaluated on stability of L. acidophilus-heavy metals complex. Theresults showed that L. acidophilus can bind to arsenic and reduce its concentration in water. In addition, it's ability for arsenic adsorption enhanced following heatpretreatment in weightlessness as well as normal gravity. Furthermore, L. acidophilus ability for arsenic bioremediation was lower in weightlessness at first, but, the stability of the complex in simulated gastrointestinal conditions was higher in weightlessness compared to normal gravity. Thus, the results of our study supportthe idea of using bacteria to solve arsenic pollution.

کلمات کلیدی:

"Arsenic", "Heavy metal", "weightlessness , "Lactobacillus acidophilus".