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Safety assessment of bacterial isolates as potential probiotics with uranium removal properties by testing wastewater for multiple heavy metals and antibiotic resistance

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In this study, six bacterial isolates were characterized according to their response to antibiotics and 10 heavy metals other than uranium. The goal of this research is to isolate lactic acid bacteria that had significant probiotic features from different dairy products. Homo-fermentative LAB were isolated from different dairy products in Egypt. All isolates were screened for enzymatic activity using API ZYM KITS and according to their antibiotic sensitivity *in vivo*. The biochemical and physiological results indicated that the isolates were related to the genus *Lactobacillus* and potentially to *L. casei* (4 isolates), the genus *L. acidophillus* (3 isolates) and, finally, the genus L. lactis (1 isolates) and these organisms produced β-galactosidase, which is beneficial for lactose intolerance. *Lactobacillus* spp. produced enzymes, so we concluded that human milk, yogurt and raw milk were sources of potential probiotic strains and that the isolated bacteria had no hemolytic activity and no acquired resistance to antibiotics. Thus, human milk is considered to be a strong potential probiotic and safe for human use.

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