عنوان مقاله:

EVALUATION OF SOME HEAVY METALS AND ANTIBIOTICS RESISTANCE IN SOME OF PROBIOTIC BACTERIA

محل انتشار:

نوزدهمین کنگره بین المللی میکروب شناسی ایران (سال: 1397)

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خلاصه مقاله:

Background and Aim:The emerging development of the industry has caused a serious problem for human health. One of the most important issues, is food contamination with heavy metals. The entry of heavy metals into the food chain at critical concentrations will have adverse metabolic and physiological effects on living organisms. This study was conducted to determine the resistance profile of probiotic bacteria to heavy metals (lead and cadmium) and different antibiotics.Methods:In this study, six standard Lactobacillus species were investigated. The susceptibility of bacterial species to lead and cadmium as heavy metals, and different antibiotics such as erythromycin, vancomycin, tetracycline, chloramphenicol, streptomycin, kanamycin and gentamicin by Broth Microdilution Method in a 96-well micro-titer plate for determining Minimum Inhibitory Concentration (MIC) were assayed. Combination of different antimicrobial agents as FIC index (Fractional Inhibitory Concentration) were also calculated consequently.Results:The results showed that the growth of all studied bacteria were inhibited for vancomycin at higher concentration and for erythromycin at the lowest concentration. Also the growth of all strains for lead as a heavy metal was inhibited at higher concentrations than cadmium. Combination of vancomycin and cadmium in Lactobacillus acidophilus ATCC 4356 and Lactobacillus plantarum ATCC 8014, and streptomycin and cadmium in Lactobacillus rhamnosus ATCC 7469 resulted in synergistic effects.Conclusion:All studied bacteria had different antibiotic and heavy metal resistance patterns. Because of that these bacteria are continually challenging with different antimicrobials agents, throughout their lives, the persistence of this exposure could convert the probiotic bacteria as a resistance reservoir related to food for antibiotics and heavy metals.

کلمات کلیدی:

Heavy metal resistance, Antibiotic resistance, Minimum Inhibitory Concentration, Fractional Inhibitory Concentration, Synergistic effects