

Assessment of probiotic potential and anticancer activity of newly isolated vaginal bacterium *Lactobacillus plantarum* 5BL

ABSTRACT

Numerous bacteria in and on its external parts protect the human body from harmful threats. This study aimed to investigate the potential beneficial effects of the vaginal ecosystem microbiota. A type of bacteria was isolated from vaginal secretions of adolescent and young adult women, cultured on an appropriate specific culture medium, and then molecularly identified through 16S rDNA gene sequencing. Results of 16S rDNA sequencing revealed that the isolate belongs to the *Lactobacillus plantarum* species. The isolated strain exhibited probiotic properties such as low pH and high bile salt concentration tolerance, antibiotic susceptibility and antimicrobial activity against some pathogenic bacteria. The anticancer effects of the strain on human cancer cell lines (cervical, HeLa; gastric, AGS; colon, HT-29; breast, MCF-7) and on a human normal cell line (human umbilical vein endothelial cells [HUVEC]) were investigated. Toxic side effects were assessed by studying apoptosis in the treated cells. The strain exhibited desirable probiotic properties and remarkable anticancer activity against the tested human cancer cell lines ($P \leq 0.05$) with no significant cytotoxic effects on HUVEC normal cells ($P \leq 0.05$). Overall, the isolated strain showed favorable potential as a bioactive therapeutic agent. Therefore, this strain should be subjected to the other required tests to prove its suitability for clinical therapeutic application.

Keyword: Anticancer; Apoptosis; Microbial biotherapy