

Safety Evaluation and Antimicrobial Properties of *Lactobacillus pentosus* 22C Isolated from Iranian Traditional Food

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Today, safety is a priority in food and dairy industry and an important step for introducing the traditional products for industrial production.

Determination of antimicrobial activity and evaluation of the safety of candidate strains based on antibiotics susceptibility and virulence potential genes are the most important safety assessment steps. The ability to inhibit other bacteria may allow the probiotic to inhabit a niche; and increase its ability to competitively inhibit other gastrointestinal microbes and pathogenic bacteria. Moreover, antimicrobial activity may control fermentation and increase the shelf life of food products. Purified antimicrobial compounds can be used as additives, but in situ production of antimicrobial compounds using a producer starter culture is regarded as a more commercially attractive strategy in fermented food.

This study aimed to evaluate the safety and antimicrobial potential of *Lactobacillus pentosus* 22C, isolated from traditional yogurt from Kermanshah province, Iran. Strain 22C showed no undesirable amino acid decarboxylase and β -hemolytic activities. The isolate was assessed for the incidence of virulence genes (*gelE*, *efaAfm*, *efaAfs*, *ace*, *espfs*, *cylM*, *cylA* and *cylB*), sensitivity to various antibiotics and virulence phenotypes. The strain produced an antimicrobial molecule named pentocin22C, a small peptide with a relative mass between 5 and 10 kDa. Bacterial inhibition was pH-independent, with greater activity at pH 4-6. Purified or semi-purified antimicrobial agents can be used as bio-preservatives, and the producing strain can be used as a bacteriocin producing starter culture to improve food safety.