



RESEARCH ARTICLE.....

Detection and characterisation of antimicrobial peptide produced by *Bacillus subtilis* FPTB23 isolated from curd

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ABSTRACT..... The growing consumer demand for finding natural but effective food preservation free of potential health risks has stimulated research in the field of biopreservation to find an attractive and alternative approach to chemical preservatives. Among the 51 colonies that displayed antibacterial activity against the indicator lawn of *Staphylococcus aureus* ATCC 25923, one colony isolated from curd, showed strong antimicrobial activity against the indicators tested, viz., *Staphylococcus aureus* (ATCC 25923), *Enterococcus faecalis* (MTCC 2729), *Vibrio cholera* and *Vibrio parahaemolyticus*. The isolate was identified as *Bacillus subtilis* by 16S rRNA gene sequencing and NCBI BLAST Analysis, having the Accession number KF556680. The neutralized cell free supernatant (NCFS) of isolate *B. subtilis* FPTB23 was able to inhibit the growth of *S. aureus* (ATCC 25923), *E. faecalis* (MTCC 2729), *V. cholerae* and *V. parahaemolyticus* inferring that the NCFS contains metabolites which is either a bacteriocin or bacteriocin like inhibitory substance. The strong antagonism against a number of serious and challenging foodborne pathogens/spoilage-causing micro-organisms advocated the high possibility of using this isolate as an effective preservative in food. The minimum inhibitory concentration (MIC) for the NCFS of *Bacillus subtilis* FPTB23 against *Enterococcus faecalis* (MTCC 2729) was found to be 200 AU/ml. The antimicrobial substance produced by *B. subtilis* FPTB23 was moderately heat stable, showed maximum activity at pH 7. The NCFS was completely inactivated after treatment with proteolytic enzymes such as, proteinase K and protease, which reveals the proteinaceous nature of the active substance. Exposure to Triton x-100, Tween 80, chloroform and butanol significantly decrease inhibition action. The molecular mass of the active form was found 21.5kDa by SDS-PAGE. The isolated species or its NCFS, therefore, can be used as food preservative reducing the requirement of intense heat treatments for foods to extend the shelf lives, thus, helping to maintain the freshness or unique texture of foods.

KEY WORDS..... Biopreservation, Antimicrobial activity, *Bacillus subtilis*, Neutralised cell free supernatant

HOW TO CITE THIS ARTICLE - Nath, S., Dora, K.C., Sarkar, S. and Chowdhury, S. (2015). Detection and characterisation of antimicrobial peptide produced by *Bacillus subtilis* FPTB23 isolated from curd. *Asian J. Animal Sci.*, 10(2): 115-123.

ARTICLE CHRONICLE - Received : 29.10.2015; Revised : 31.10.2015; Accepted : 03.11.2015

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