

TITLE Properties and Characteristics of Bacteriocin produced by Kefir grain
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Abstract

Kefir is an acidic and mildly alcoholic fermented dairy product that is believed to have functional properties. Bacteriocin is protein produced by lactic acid bacteria that have antibacterial activity. Bacteriocin have attracted much interest are safe for human consumption and can be used for inter preservation of food product. This research aims to study the properties and characteristics of bacteriocin produced by Kefir grain. The antimicrobial activities of five kefirs (Kefir DA 500 I, Kefir DC 500 I, Kefir DG 500 I, Kefir DT 500 I and Kefir BT 1) were investigated by swab paper disk method. This bacteriocin had broad range of antibacterial activity against some members of gram positive and gram negative pathogenic bacteria e.g. *Escherichia coli*, *Pseudomonas fluorescens*, *Bacillus subtilis* and *Staphylococcus aureus*. The propertie of the cell free supernatant of the kefir was stable at pH 2 to 10 but provided the high bacterial inhibition activity at pH 5, 6 and 7. In addition, bacteriocin was also stable at 100°C for 10 minutes. On the other hand, bacteriocin was sensitive to high temperature (100 °C for 20-30 minutes and 121°C for 15 minutes). Production of bacteriocin after 10 hours of fermentation in MRS broth at 37°C was found to be 160 AU/ml and after 18 hours there was increase in production rate to 240 AU/ml. The bacteriocins were purified by ammonium sulphate precipitation and ion exchange chromatography (Sephadex gel G-50). Molecular weight of bacteriocins produced by bacteria was analyzed using Sodium dodecyl sulphate-polyacrylamide-gel electrophoresis (SDS-PAGE). Biochemically they were pure protein moiety and the molecular weight was 2.5 kDa (Kefir DT 500 I)

Keyword: Bacteriocins, Kefir, Cell free supernatant