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Characterization of the exopolysaccharide-producing lactic acid bacteria isolated from Vietnamese feces

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This study was conducted to investigate the isolate and identify strains of Exopolysaccharide (EPS) -producing lactic acid bacteria (LAB) from Vietnamese feces and to evaluate EPS produced by them; characteristics and potential use of probiotics in yogurt and to investigate a relation between EPS production and texture of yogurt. A total of 32 LAB strains were isolated from feces and their phenotypic characteristics were assayed. Two isolates from sucrose agar plates were selected and designated as *E. faecium* VN26 (VN26) and *L. plantarum* VN27 (VN27). In acid tolerance of two strains, the number of viable cells diminished at pH 2.0 and at pH 1.5 the survival rate of the LAB was seen to decrease significantly. These strains evidenced a good survival rates in the presence of 1.0% bile salt, even though subsequently treated in artificial gastric juice. In general, high-EPS-producing ST-body 1 strain showed lower aggregation abilities than isolated strains. Weight of the crude and purified EPS were 29.86 ± 3.29 mg/100 mL, 6.65 ± 0.8 mg/100 mL and 37.3 ± 4.8 mg/100 mL, 8.40 ± 0.7 mg/100 mL for VN26 and VN27, respectively. HPLC analysis showed that crude and purified EPS produced by strains were hetero polysaccharides. The FT-IR spectra analysis suggested that it was highly likely that the EPS belonged to α -type heteropolysaccharides with pyranose saccharides. Antioxidant activity was analyzed by FRAP, ABTS and hydroxyl radical analysis from purified EPS. In the yogurt samples, fermented from ST-body 1 that is characterized by the highest amount of EPS and highest viscosity, presented a pronounced syneresis phenomenon. These results suggest that EPS-producing strains isolated from Vietnamese feces has potential antioxidant capacity and obtained polysaccharide might be a potential candidate for the role of useful natural supplement and can be used as probiotics in yogurt.

Biography

Cheol-Hyun Kim has done his PhD in Dairy Science & Microbiology from the Seoul National University, Seoul, South Korea and worked for 13 years at Seoul Dairy Cooperative R&D Center. He has been involved in basic research on dairy chemistry, microbiology, microencapsulation and development of functional fermented milk products. After 2007, he became a Professor as Animal Resources Science in Dankook University, Cheon-an, South Korea and has been conducting joint research on the small and medium dairy companies. He also teaches Dairy Science, Food Chemistry, Milk Processing Technology and Quality Controls and Assurance of Animal Resources. Currently, he is an Academic Chairman at Korean Society of Dairy Science and Technology and Korean Society for Lactic Acid Bacteria.

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