ISOLATION AND MOLECULAR CHARACTERIZATION OF LEUCONOSTOCMESENTEROIDESPOTENT PRODUCER OF DEXTRAN

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Abstract - Exopolysaccharides (EPS) produced by lactic acid bacteria (LAB) have gained increasing attention as valuable compounds because of theirpotential applications as viscosifying, stabilizing, emulsifying, sweetening, gelling and water-binding agent in the food as well as in the non-food industries, increasing the possibility to replace or reduce the use of externalhydrocolloids. For this purpose, a total of 7 LAB strains were isolated from different animal and vegetable samples. The use of a ruthenium red medium revealed the production of exopolysaccharides by these strains, which were first identified to the genus Leuconostoc sp. based on phenotypic characteristics and PCR molecular identification using genus-specific primers by amplifying a DNA fragment of a 1200 bp. 16S rDNA gene sequencing was used to identify species level of these strains. A total of 3 strains were identified as Leuconostocmesenteroides. Based on nearly full length 16S rDNA gene sequencing analysis, a phylogenic tree was constructed. In addition, for EPS production and preparation, a selective sucrose medium has been used and shows a highly viscous growth. Other work, including precipitation, EPS hydrolysis, and total sugar determination by the phenol sulfuric acid method were determined. The results showed that the production of EPS varied from666,1 mg /l to 1254 mg /l for the highest production for Leuconostocmesenteroides LGM-L14 strain and the apparent viscosity ranged from201 to 347 centipoise (cP). Moreover, Componential analysis of hydrolyzed EPS by thin layer chromatography indicated that it is a dextran, consisting of glucose monomer. Investigations carried out on the structural characterization of these polymers by FTIR, and NMR (H1 and C13) analysis confirmed that it is α (1, 6) dextran with a low percentage of α branching (1, 3). The isolated strains of Leuconostocsp. are a potent producer of dextran, which find its applications in various areas;includingfood, pharmaceutical, agricultural industries and medicine.