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Exopolysaccharides from Probiotics and Their Industrial Applications

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Abstract—*It is a well known fact that probiotic bacteria have a beneficial role in the gastrointestinal tract of animal and human ecosystem. "Probio-active substances" are the metabolic end products of these bacteria through which beneficial effects are achieved. Exopolysaccharides are one such end product and the important class of probioactive molecules. Exopolysaccharides (EPSs) of microbial origin are long chain, high-molecular-mass water-soluble polymers which may be ionic or non-ionic. Monosaccharide components of EPS in lactobacilli comprised glucose, galactose and rhamnose. The rhamnose and glucose fractions were generally higher than the galactose fraction in EPS from human gut flora. In lactobacilli, EPSs production is most frequently found in species such as Lactobacillus acidophilus, Lactobacillus mucosae, and Lactobacillus reuteri. The EPSs play a major role in coaggregating the host strains, adhere to the intestinal epithelial cells and interfere with the adhesion of pathogenic bacteria to the host's intestinal mucus membrane. It has also been found that EPSs helps in sequestering of certain essential cations and in biofilm formation. EPS comprises of three monosaccharide components. They are glucose, galactose and rhamnose. Percentage of rhamnose and glucose are generally higher than that of galactose in the EPS found in human gut flora. Due to its immense diversity in composition, EPSs possess numerous applications in food, agronomy, pharmaceutical and cosmetic industries. In food industries it has enormous potential as texturizers, emulsifiers, viscofiers and can be used in the production of fermented dairy products. These molecules have shown antioxidant, antiulcer, antitumour and immunostimulatory activities. Although there are large number of probiotic bacteria for the EPS production but the titres are quite low for marketing. The commercial exploitation of probiotic EPSs would definitely develop novel applications in the near future.*

Keywords: *Probiotics, exopolysaccharides, biofilm, glucose, industries, application, emulsifiers, viscofiers, antioxidant, antiulcer, antitumour, immunostimulatory*