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Structures and physiological functions of extracellular polysaccharides produced by *Lactobacillus kefiranofaciens*

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Lactobacillus kefiranofaciens isolated from kefir granules produces extracellular polysaccharides in all media, including skim milk medium, modified MRS medium, and a medium containing enzymatically-hydrolyzed rice as a main ingredient. Culture in a 500L volume tank was investigated using rice ingredient medium, and 1.7g of polysaccharides was obtained per 1L of culture medium. From the results of constituent sugar analysis, methylation analysis, specific rotatory power, and ¹H- and ¹³C-NMR spectra, polysaccharides obtained by 3 kinds of different media were presumed to have a fundamentally similar structure. These polysaccharides were demonstrated to be kefiran due to a structure consisting of repetitive hexasaccharide units. In the safety test of the polysaccharides, acute toxicity value (LD₅₀) was more than 10g/kg body weight, and no mutagenicity was confirmed. In addition, a screening test of physiological functions in animals demonstrated significant effects of hypotension, improvement in blood lipid, hypoglycemic effects, and intestinal regulation. Usability of the polysaccharides as functional food materials was suggested.