

Production of Functional Polysaccharide as a Cosmetic Material by a Lactic Acid Bacterium for Food Processing and Modification of the Polysaccharide.

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Effect of co-existence of yeast cells on production of extracellular polysaccharide, (Kefiran) by *Lactobacillus kefiranofaciens* was investigated on the basis of the assumption of interaction between the yeast cells and the lactic acid bacterium in kefir grains. In the single culture of *L. kefiranofaciens*, not only the addition of yeast extract to the medium but also controlling the pH of the culture at 5.5 resulted in significant increase in amount of Kefiran produced. Since the yeast cells are considered to produce carbon dioxide and ethanol in kefir grains, the influences of aeration of gas containing carbon dioxide and addition of ethanol to the medium on Kefiran production by *L. kefiranofaciens* alone were also studied. The optimal gas composition for producing Kefiran was found to be $N_2 : CO_2 = 9:1$. By supplying ethanol at a concentration of 10 g/L, the amount of Kefiran produced was enhanced. Partially purified Kefiran was prepared from culture supernatant by ethanol precipitation, followed by anion-exchange chromatography. Gel filtration analysis indicated that the average molecular weight of partially purified Kefiran was several millions Da.