Beijerinckia indica L3 fermentation for the effective production of heteropolysaccahride-7 in various carbon sources and compositions in whey medium

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A mutant strain, *Beijerinckia indica* L3 was obtained by a traditional chemical mutagenesis. *B. indica* L3 selectively could grow in lactose-based media and produced heteropolysaccharide (PS-7) (1). *B. indica* L3 had a higher beta-galactosidase activity than that in parent strain, *B. indica* ATCC 21423. Whey can be used as a substrate for the production of PS-7 from *B. indica* L3. The objective of this study was to determine the optimal carbon sources and concentrations in whey media to improve the PS-7 production. A mutant strain, *B. indica* L3 was cultured in whey medium containing various carbon sources (glucose, galactose, lactose, and sugar) with different concentration of 0, 0.5, 1, 1.5 and 2% (w/v). The main culture was grown in 50 mL whey medium with inoculation size of 5% in a 250 mL Erlenmeyer flask for 72 h under the same conditions used for the seed culture. *B. indica* L3 produced high amount of PS-7 with high viscosity (4619.01 cP) in whey medium and the highest viscosity (5938.73 cP) was observed in whey medium consisted of 1.0% (w/v) of glucose and 1.0% (w/v) of whey. Up-scaled culture was carried out with 5 L fermenter under the same condition of flask culture in different levels of whey and glucose combination in media. The pH, PS-7, viscosity, residual sugar, and dried cell weight were monitored for 72 hours.

References

1. Jian-Rong Rong, Jeong Hwa Son, Ki Myong Kim, Jin-Woo Lee, Sung-Koo Kim, Beijerinckia indica L3 fermentation for the effective production of heteropolysaccharide-7 using the dairy byproduct whey as medium, 2005, Process Biochemistry, in press.