

P102

Development of Lactic Acid Bacteria Growth Model Isolated from Kimchi

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A mathematical model describing lactic acid bacteria growth isolated from Kimchi has been developed. The optimal conditions for cell growth was 30°C, pH 6.5, 100 rpm of agitation speed, and 0.5~1 vvm of aeration rate. Media compositions for lactic acid bacteria cultivation were yeast extract 5g/L, peptone 10g/L, sugar 20g/L, beef extract 10g/L, tween 80 1ml/L, ammonium citrate 2g/L, sodium acetate 5g/L, magnesium sulfate 0.1g/L, manganese sulfate 0.05g/L, dipotassium phosphate 2g/L. From this study, maximum specific cell growth rate was 0.28 hr⁻¹ and glucose affiliation coefficient was 3.57 g/L. Cell yield from glucose was 0.24. The model developed in this research simulate the experimental results well.

Keywords: Lactic acid bacteria, Monod equation, Mathematical model, batch culture