

1,3-propanediol production from glycerol by *Klebsiella pneumoniae* J2B, new isolate

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*Klebsiella pneumoniae* J2B, a new isolate, produces much less lipopolysaccharide and has better settling properties than the well-known *K. pneumoniae* DSMZ 2026 strain. The current study is an attempt to characterize *K. pneumoniae* J2B for its ability to transform glycerol into 1,3-propanediol (PDO). *K. pneumoniae* J2B was evaluated for the medium composition, cultivation conditions and cultivation mode in order to maximize production capacity. The optimized composition of M9 medium (in 100 mM phosphate buffer) was as follows: (g/L) glycerol, 69.0 (750 mM); yeast extract, 5.0; NH<sub>4</sub>Cl, 5.0; NaCl, 1.0; MgSO<sub>4</sub>•7H<sub>2</sub>O, 1.25; CoCl<sub>2</sub>, 0.025. The fed-batch cultivation of the lactate-deficient mutant strain of *K. pneumoniae* J2B in shake flask using modified M9 medium under microaerobic conditions resulted in 435 mM PDO with a yield of 0.46 (mol/mol). After PDO, 2,3-butanediol (BDO) was the most abundant metabolite. The addition of glucose resulted in faster cell growth and caused a shift in metabolic flux from oxidized (acetate) to reduced products (BDO, ethanol & succinate). The co-fermentation of glucose and glycerol at a molar ratio of 0.27 yielded almost equal amounts of PDO (239.7 mM) and BDO (222.4 mM).