

2,3-butanediol production by *Klebsiella oxytoca* using semi-continuous two-stage simultaneous saccharification and fermentation process

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Klebsiella oxytoca is one of the most promising 2,3-butanediol (2,3-BD) producers. we have developed a metabolically engineered *K. oxytoca* DldhA DpflB strain to reduce the formation of byproducts. To improve 2,3-BD productivity and examine the stability of *K. oxytoca* DldhA DpflB strain for industrial application, a semi-continuous two-stage simultaneous saccharification and fermentation (STSSF) process was developed. The STSSF with the *K. oxytoca* DldhA DpflB mutant using cassava by a carbon source could produce 108 ± 3.73 g(2,3-BD) / L with a yield of 0.45 g(2,3-BD) / g(glucose) and a productivity of 3.00 g(2,3-BD)/L·h. No apparent changes in the final titre, yield and productivity of 2,3-BD were observed for up to 20 cycles of STSSF. Also, microbial contamination and spontaneous mutation of the host strain with potential detrimental effects on fermentation efficiency did not occur during the whole fermentation period. These results strongly underpin that the *K. oxytoca* DldhA DpflB mutant is stable and that the STSSF process is commercially exploitable.