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Biosynthesis of Citric Acid from Glycerol by Acetate Mutants of *Yarrowia lipolytica* in Fed-Batch Fermentation

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Summary

Pure and crude glycerol from biodiesel production have been used as substrates for citric acid production by acetate-negative mutants of *Yarrowia lipolytica* in fed-batch fermentation. Both the final concentration and the yield of the product were the highest when *Y. lipolytica* Wratislavia AWG7 strain was used in the culture with pure or crude glycerol. With a medium containing 200 g/L of glycerol, production reached a maximum of citric acid of 139 g/L after 120 h. This high yield of the product (up to 0.69 g of citric acid per gram of glycerol consumed) was achieved with both pure and crude glycerol. Lower yield of citric acid in the culture with *Y. lipolytica*

Wratislavia K1 strain (about 0.45 g/g) resulted from increased erythritol concentrations (up to 40 g/L), accumulated simultaneously with the citric acid. The concentration of isocitric acid, a by-product in this fermentation, was very low, in the range from 2.6 to 4.6 g/L.

Key words: citric acid, crude glycerol, erythritol, fed-batch process, *Yarrowia lipolytica*

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