

Optimization of hexanoic acid production from sucrose as a sole carbon source by
Megasphaera sp.

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Hexanoic acid, a six-carbon straight-chain fatty acid, can be produced from inexpensive materials and it is a potentially useful industrial chemical and bio-fuel precursor. In this study, hexanoic acid production from sucrose was investigated with *Megasphaera* sp. Complex medium (mPYS medium) with sucrose 20 g/L and 3 g/L sodium acetate was used and the initial pH values were 5, 5.5, 6, 6.5, 7, 7.5, and 8. Hexanoic acid concentration at the end of the fermentation was 3.79 g/L at the initial pH of 5.5. To improve hexanoic acid production, optimization of medium compositions for hexanoic acid production by *Megasphaera* sp. was attempted using sucrose as a sole carbon source. The main components of the medium affecting hexanoic acid production were selected. Plackett-Burman experimental design for eight variables (sucrose, FeSO₄•7H₂O, (NH₄)₂SO₄, yeast extract, acetic acid, butyric acid K₂HPO₄ and MES) was applied to screen significant factors in the defined medium for hexanoic acid production. Further optimization of medium with Response Surface Methodology would make it possible to effectively produce hexanoic acid from sucrose by *Megasphaera* sp.