粟酒裂殖酵母发酵菊芋生产燃料乙醇试验 Ethanol Production from Jerusalem Artichoke Using Schizosaccharomyces pombe

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关键词： 菊芋 粟酒裂殖酵母 同步糖化发酵 乙醇发酵

摘 要： 以菊粉为原料，研究了粟酒裂殖酵母的乙醇发酵性能，并考察了温度、初始pH值和菊粉质量浓度对乙醇发酵的影响，进而研究了粟酒裂殖酵母发酵菊芋汁和菊芋粉生产乙醇的情况。结果表明：粟酒裂殖酵母能发酵菊粉高产乙醇；该菌株最适发酵温度为30℃，最适初始pH值为4.0，在此条件下，菊粉质量浓度200g/L时，乙醇质量浓度达到74.58g/L，理论转化率为81.24%；直接发酵菊芋汁和菊芋粉获得更高的乙醇产率，理论转化率分别达到84.02%和86.09%。 The ethanol fermentation capability of Schizosaccharomyces pombe from inulin was investigated. The effects of temperature, inulin concentration, and initial pH value on the ethanol fermentation were studied. The ethanol production from Jerusalem artichoke juice and flour were further studied. Experimental results showed that S.pombe demonstrated good ethanol fermentation performance. The optimum initial pH value was 4.0, and the optimum temperature was 30℃. Under the optimal conditions, the maximum ethanol concentration of 74.58g/L, equivalent to 81.24% of the theoretical yield, was reached from 200g/L inulin concentration after 72h of incubation. Higher theoretical conversion rates of 84.02% and 86.09% were obtained when Jerusalem artichoke juice and flour were directly used in fermentation, respectively.

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