米根霉菌丝球半连续发酵产乳酸的工艺研究 Production of Lactic Acid by Pellets of Rhizopus oryzae in Semi-continuous Fermentation

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关键词： 乳酸 米根霉 半连续发酵 菌丝球

摘 要： 采用单因素试验和正交试验设计，以乳酸质量浓度及菌丝形态为考察指标，对米根霉首批发酵培养基及补料培养基进行优化，得到适于米根霉半连续发酵的培养基，建立了米根霉半连续发酵工艺，并进行米根霉半连续发酵产乳酸的稳定性试验。得到首批培养基参数为葡萄糖120g/L，(NH4)2SO4 2g/L，NaH2PO4 0.16g/L，KH2PO4 0.14g/L，MgSO4?7H2O 0.2g/L，ZnSO4?7H2O 0.22g/L，CaCO3 60g/L；补料培养基参数为葡萄糖100g/L，（NH4）2SO4 2g/L，KH2PO4 0.1g/L，ZnSO4?7H2O 0.33g/L，MgSO4?7H2O 0.15g/L，CaCO3 50g/L，摇瓶重复稳定发酵30批次，罐发酵重复稳定发酵20批次，葡萄糖转化率最高达到86%。 By using single-factor test and orthogonal test, the optimized seed medium and feeding medium were obtained, with the aim to study the stability of the production of lactic acid by Rhizopus oryzae though semi-continuous fermentation. The optimization culture medium was as follows: glucose 120g/L, (NH4)2SO4 2g/L, NaH2PO4 0.16g/L, KH2PO4 0.14g/L, MgSO4?7H2O 0.2g/L, ZnSO4?7H2O 0.22g/L, CaCO3 60g/L; the feeding medium was as follows: glucose 100g/L, （NH4）2SO4 2g/L, KH2PO4 0.1g/L, ZnSO4?7H2O 0.33g/L, MgSO4?7H2O 0.15g/L, CaCO3 50g/L. In flask culture 30 repeated stable fermentation were carried out, and 20 batches were carried out in a 5 L stirred tank fermentor. The highest lactic acid yield from glucose was up to 86%.

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