

研究论文

十二烷基苯磺酸/异辛烷微乳液中脂肪酶催化合成异丁酸异戊酯

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摘要 在十二烷基苯磺酸(DBSA)/异辛烷微乳液中进行了脂肪酶催化合成异丁酸异戊酯的反应, 考察了微乳体系的含水量 w_0 、溶解酶缓冲溶液的pH值、反应温度等因素对酯合成反应转化率的影响;

与前期研究的CTAB微乳体系进行比较发现, DBSA微乳体系中的酯合成反应速率明显增加, 短时间内的转化率显著提高, 在温和条件下反应9 h后, 转化率达90%以上;

通过DBSA体系中有酶与无酶条件下反应进程的比较得知,

DBSA作为一种质子酸对酯合成反应具有一定的催化能力; 提出了该体系中微乳催化、酶催化和质子酸催化的三重催化机理.

关键词 [十二烷基苯磺酸\(DBSA\)](#) [微乳液](#) [脂肪酶](#) [催化合成](#) [异丁酸异戊酯](#)

分类号

Lipase-catalyzed Synthesis of Isoamyl Isobutyrate in DBSA/Isooctane Microemulsion System

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Abstract Lipase-catalyzed synthesis of isoamyl isobutyrate in dodecylbenzenesulfonic acid (DBSA)/isooctane microemulsion system was reported in this paper. The effects of such factors as water content (w_0), pH of buffer solution and temperature on the esterification were investigated. Compared with the former research in CTAB microemulsion system, the reaction rate of the esterification and the conversion in short time were all increased obviously in DBSA microemulsion system. The conversion of this reaction exceeded 90% after 9 h in mild condition. So it is a new microemulsion system and even suitable for the esterification. Through the contrast of DBSA system with lipase present and absent, it was concluded that DBSA, as a kind of proton acid, has catalytical ability to the esterification. The microemulsion catalyzed, enzyme catalyzed and proton acid catalyzed ternary mechanism was proposed in this microemulsion system.

Key words [DBSA](#) [microemulsion](#) [lipase](#) [catalyzed-synthesis](#) [isoamyl isobutyrate](#)

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