

Synthesis of esomeprazole catalyzed by immobilized cells

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Abstract

The asymmetric sulfoxidation of the omeprazole thioether to synthesize esomeprazole catalyzed by immobilized cells of a mutant of *Rhodococcus rhodochrous* ATCC 4276 in the chloroform–water biphasic system was carried out at a high substrate concentration (200mM) and optimized using response surface methodology (RSM). The optimal yield of esomeprazole obtained was 94.8% with e.e. (>99%) without the formation of the sulfone. A quadratic polynomial model was developed with R² of 0.9998, which indicates that the model predicts the observed data with very high accuracy. The mutant exhibited a high enantioselective, activity and substrate and product tolerance. The significant improvement of substrate tolerance may mainly be contributed by employing the chloroform–water biphasic system because almost all substrates may partitioned in the organic phase, resulting in little damage and inhibition to cells by substrates.

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