

Use of enzyme microreactor for the synthesis of alpha-ketoglutarate

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α -Ketoglutarate (also called oxo-glutarate) is an important nitrogen acceptor in metabolism. It is produced by oxidative deamination of glutamate or reductive carboxylation of succinate. It has been used for the production of creatin- α -ketoglutarate which used as a fitness supplement.

In this study, we developed an efficient α -ketoglutarate production system using enzyme aggregated nanofibers and microreactor. L-glutamic dehydrogenase was aggregated on the surface of nanofiber and used to develop microreactor. The micro channel in a microreactor was covered with enzyme aggregated nanofibers and the reaction temperature was controlled at 45oC. When the flow rate was controlled at 0.3 ml/hr, the conversion of α -ketoglutarate from glutamate was 35%.