Enzymatic processing of castor oil for value-added products

Annamma A Odaneth
Centre for Energy Biosciences, Institute of Chemical Technology, India

Lipase-mediated hydrolysis of castor oil yields a high value product free from odour, colour and undesired side products, associated with conventional hydrolytic methods. However, use of immobilized lipase is limited by diffusional constraints of conventional two phase reaction media. Smart design of reaction media allowing oil homogenization was carried out in this study for hydrolysis of castor oil using indigenously immobilized lipases. Optimization of various parameters towards complete hydrolysis was carried out in batch experiments. Maximum hydrolysis of 85% was obtained for the reusable immobilized lipase preparation under packed bed conditions. The activity of immobilized enzyme for the said reaction under optimised conditions was observed to be >85% with no loss of activity for upto 10 cycles tested. The product so formed can be further converted to sugar alcohols, estolides, conjugated linolenic acids or lactones either by enzymatic/microbial methods. The advantage of biotransformation allows production of clean materials that find wider applicability and also higher commercial value.

Biography

Annamma A Odaneth has completed her PhD at the age of 24 years from Institute of Chemical Technology in Applied Chemistry and her postdoctoral studies from the same laboratory in Enzymatic Transformations. She is associated with Enzyme Group at the DBT-ICT Centre for Energy Biosciences, which is involved in the developing technologies aimed at valorizing agricultural based products.

aannamma@gmail.com