BIOTRANS
LA ROCHELLE 2023

N°1472 / PC
TOPIC(s) : Biocatalytic cascade reactions / Enzyme production, immobilization

Lipase from Candida antarctica supported on 3-D printed structured resin packings for reactive distillation

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PURPOSE OF THE ABSTRACT

Reactive distillation was carried out for the enantioselective transesterification of racemic 2-pentanol with ethylbutyrate using a supported enzymatic catalyst. The reaction was designed to achieve the reaction-separation coupling by using structured resin packings coated with a sol-gel containing the lipase from Candida antarctica (CALB). This study is focus on one hand, on improving the gel properties for the coating process, also to immobilize the lipase without releasing and activity lost, on the other hand, the kinetics and hydrodynamics of the reactive distillation are also studied. Parameters such as catalyst loading, silica precursors, and alcohol were considered to improve the process of dip-coating in terms of gelation time, gel quality, and the resistance and stability of the gel coated on the resin. The design of the interns is established to respond to these problems from a laboratory scale to a pilot scale.

FIGURES

FIGURE 1

FIGURE 2

KEYWORDS

Enzymatic reactive distillation | CALB | Structured resin packing | Sol-gel enzyme immobilization

BIBLIOGRAPHY