

Operational parameters for packed beds in solid-state cultivation

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Abstract

Packed bed cultivation systems have potential for widespread application in solid-state cultivation (SSC), but they are poorly characterized. The effects of particle size and substrate loading on the growth of *Rhizopus oligosporus* on sago-beads in packed bed bioreactors were investigated. Pressure drop and protein were monitored as indicators of fungal growth in cultivations performed in a large column (4.9 cm internal diameter and 60 cm height) and a system of small columns (4.2 cm internal diameter and 5.2 cm height). The differential pressure drop increased to a maximum between 34 and 44 h and then decreased again. The maximum differential pressure drop attained was greatest for the smallest particle size and for the lower substrate loadings. However, since the protein content continued to increase throughout the cultivation, pressure drop could not be used to monitor growth directly.

Keywords : Solid-state cultivation; pressure drop; packed bed; *Rhizopus oligosporus*