

论文

树脂填充聚醚砜纤维吸附剂对牛血清蛋白吸附性能的研究

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摘要 重点研究树脂填充聚醚砜(PES)纤维吸附剂与模型蛋白质牛血清蛋白(BSA)之间的吸附与脱附行为. 结果表明, 蛋白质BSA在树脂填充PES纤维吸附剂中的平衡吸附过程较好地符合朗格缪尔吸附模型, 树脂Lewatit CNP80ws填充PES吸附剂的最大吸附容量约为139mg BSA/g吸附剂. 表面具有开孔结构的树脂填充PES纤维吸附剂的吸附速率较快, 在不同结构纤维吸附剂中BSA的扩散系数在 $1.82 \times 10^{-14} \sim 8.7 \times 10^{-14} \text{m}^2/\text{s}$ 范围内变化. 另外, 考察了BSA溶液的pH与洗脱剂等因素对吸附剂吸附与脱附性能的影响, 研究结果对蛋白质的实际分离纯化具有重要的参考价值.

关键词 [纤维吸附剂](#) [膜吸附剂](#) [填充膜](#) [聚醚砜](#) [牛血清蛋白](#)

分类号

STUDIES OF ADSORPTION OF BOVINE SERUM ALBUMIN ON RESIN MIXED PES FIBROUS ADSORBENTS

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Abstract The resin mixed PES-based fibrous adsorbents with open pore structure on the surface were prepared, and their adsorption behavior with BSA was studied. The adsorption isotherm demonstrated that the adsorption was well fitting the Langmuir model. The maximum adsorption capacity was about 139 mg BSA / g adsorbent. The resin Lewatit CNP80ws mixed PES—based fibrous adsorbent with more open pore structure on its surface had much more adsorption capacity with high adsorption rate for BSA. The effective diffusion coefficient of BSA in different resin mixed PES—based fibrous adsorbents was in the range of $1.82 \times 10^{-14} \sim 8.7 \times 10^{-14} \text{m}^2/\text{s}$. The values of diffusion coefficient of BSA in these fibrous adsorbents were comparable with those in resins reported in the literatures. The influence of operation parameters on the behavior of adsorption and desorption of BSA for the weak acidic type cation exchange resin mixed PES—based fibrous adsorbent in different structures was also investigated in this work. The pH of BSA buffer solutions was a very important parameter when the ion—exchange adsorbent was used for separation of proteins. The result indicated that the adsorption capacity was very low when the pH of BSA solutions was above the isoelectric point of BSA.

Key words [Fibrous adsorbent](#) [Membrane adsorber](#) [Mixed membrane matrix](#) [PES](#) [BSA](#)

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