PREPARATION AND PROPERTY OF TWO AFFINITY MEMBRANES USED FOR ENDOTOXIN REMOVAL

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Affinity membrane having high specificity and selection used for purifying bioproducts from complex and dilute mixture has been quickly developed during last ten years[1-3]. A functional group named ligand is covalently bound to chemically modified membrane surface (both outer and inner surface in the pores). When a mixture feed solution containing named ligate molecules to be separated flows through the affinity membrane, the target compound (ligate) will be specifically and reversibly adsorbed on it to form a complex. In order to cleave the complex from the membrane, a salt solution containing a compound with greater than target molecule affinity with ligand passes through the membrane under pressure driving by pump, so that a solution containing free target compound can be obtained. According to this principle we have prepared several affinity membranes for use in bioproduct separations and purifications such as trypsin inhibitor[4], alkaline phosphatase[5], human serum albumin and α-interferon[6,7].

In recent years we also have developed two affinity membranes with histidine (His) and Polymyxin B (Pm B) as ligands used for endotoxin removal in some medicines and biomedical products. The affinity membranes based on cellulose and polyamide as raw materials have been prepared by following procedures: (1) crosslinking and chemical modification of the membrane's surface in order to improve mechanical and chemical properties by epoxy method; (2) spacing arms containing 2 or 6 carbon atoms are bond to the modified surface of the membranes; (3) ligands (His or Pm B) are coupled to the spacing arms.

The experimental results showed that the membranes have higher affinity adsorption capacity with endotoxin. Table 1 listed and compared their main physical and chemical characteristics.

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