38-15 Chromatographic removal of endotoxin from cellular products with poly(ε -lysine)-immobilized cellulose beads

(ポリリジン固定化セルロースビーズを用いた生体関連物質溶液からのエンドトキシンの除去)

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In this study, to remove endotoxin (lipopolysaccharides; LPS) from cellular products used as drugs, poly(∑-lysine)-immobilized cellulose beads (PL-cellulose) were prepared. The PL-cellulose beads with large or small pore-size were prepared by a immobilization of poly(∑-lysine) (produced by *Streptomyces albulus*, M_n: 4000) on to chloromethyloxirane-activated cellulose beads (Cellufine-CPC or -GC15)(Chisso Corp.), respectively. Although the beads with large pore-size of M_{lim}>2x10^6 (PL-cellulose-10^6) showed a high adsorbing activity of LPS, the beads also adsorbed an acidic protein, such as BSA, at pH 7.0 and a low ionic strength of⌠= 0.05. By contrast, PL-celluose-10^3 with small pore-size (M_{lim}: 2×10^3) selectively adsorbed LPS from a BSA solution at a low ionic strength of ⌠= 0.05, without adsorption of the BSA. As a result, affinity chromatography techniques using PL-cellulose-10^6 and PL-celluose-10^3 can reduce concentrations of endotoxin to 100 pg/mL or lower in various protein solutions at physiological pH and the ionic strength of 0.2 and 0.05, respectively. The techniques do not affect the recovery of even acidic proteins such as BSA.

(Proceeding of 29th High Performance Liquid Phase Separations and Related Techniques, p.534, Stockholm, Sweden, 2005.6)