

**39-18 Selective removal of DNA from bioproducts by
polycation-immobilized cellulose beads**
(ポリカチオン固定化セルロースビーズによる DNA の選択除去)

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概要:

This paper describes a method for the selective removal of DNA from various cellular products using columns packed with polycation-immobilized cellulose beads. Polyethyleneimine (PEI), poly-*N,N*-dimethylaminopropylacrylamide (poly(DAPA)) and poly(ϵ -lysine) (P ϵ L), all of which have cationic properties, were used as the ligands on the beads. Cellufine-GC15[®] and -CPC[®] were used as cellulose matrices. Adsorption of DNA by the beads was determined using a batchwise method or a column method. Each bead type showed high DNA-adsorbing activity at pH 7.0 and ionic strengths of $\mu = 0.05$ -0.8. The larger the pore size of the beads, the larger the DNA-adsorbing activity. The DNA-adsorbing capacities per wet-mL of PEI-, poly(DAPA)- and P ϵ L-immobilized Cellufine-CPC with large pore sizes, were 3.7, 3.2 and 1.8 mg, respectively. When a protein, such as bovine serum albumin (BSA) or γ -globulin, was present in solution with the DNA under physiological conditions (pH 7.0, $\mu = 0.2$), the DNA selectivity of the PEI-immobilized Cellufine-CPC columns was unsatisfactory, because both the DNA and the protein were adsorbed onto the column. In contrast, the poly(DAPA)-immobilized Cellufine-CPC column selectively removed DNA from each protein solution contaminated with DNA under similar conditions: the DNA concentration in each treated protein solution was below 10 ng mL⁻¹, and high recovery of each protein (>92%) was obtained.

発表誌名: Journal of Liquid Chromatography & Related Technologies, vol. 29, pp.2499-2512 (2006.9)