

35-34 Cross-linked N,N-dimethylaminopropylacrylamide spherical particles for removal of nucleic acids from protein solution
(タンパク質水溶液からの核酸除去のための橋かけジメチルアミノプロピルアクリルアミド球状粒子)

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Cross-linked DMP spherical particles for the selective remove nucleic acids from a solution of a cellular product were prepared. The hydrophobisity and pore size of the particles was easily adjusted by changing the cross-linking agent and the diluent ratio in the cross-linking, respectively. The cross-linked DMP particles (DMP/AA, DMP/BMAA, and DMP/DVB), which had diameters of 44-105 μm and AEC of about 5 meq/g, were used as adsorbents. When the DNA-removing activity of the adsorbents was determined by a batchwise method at pH 7.0 and ionic strength of $\mu=0.05$, DMP/DVB adsorbent, which had the strongest hydrophobisity and the largest pore size ($M_{\text{lim}}: 8 \times 10^3$ as polysaccharide), showed the highest DNA-removing activity (adsorption capacity: 54 mg/ml-adsorbent, $K_{\text{d,app}}: 4.5 \times 10^{-11}$ M). However, the larger the M_{lim} of the adsorbent, the larger the adsorption of acidic protein, such as BSA, to the adsorbent.

As a result, when the DMP/DVB=80/20 ($M_{\text{lim}}: 2 \times 10^3$, AEC: 5.0 meq/g) was used by a column method at pH 7.2 and $\mu=0.17$, it only selectively removed DNA from a BSA solution. The adsorbent decreased the concentration of DNA in the BSA solution from 10 $\mu\text{g/ml}$ to less than 10 ng/ml, and the recovery rate of BSA was more 99%.

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