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Limulus Amebocyte Lysate Assay for Endotoxins by an Adsorption Method with Polycation-immobilized Cellulose Beads

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To assay lipopolysaccharides (LPSs) in solutions containing *Limulus* amebocyte lysate (LAL)-inhibiting or LAL-enhancing compounds, we developed a selective endotoxin (LPS) assay using poly(ε-lysine)-immobilized cellulose beads (PL-Cellufine) and LAL. The PL-Cellufine can adsorb LPSs in a solution containing certain compounds (NaCl, proteins and amino acids) at an ionic strength of $\mu = 0.05 - 0.4$ at neutral pH. The LPSs adsorbed on the PL-Cellufine were separated from the compounds by centrifugation and then the PL-Cellufine was suspended in LPS-free water. The LPS activities of the suspension are directly assayed by a turbidimetric time assay with the LAL reagent. The accuracy of the adsorption method was high compared with those of common solution methods. As for the common method, the apparent recovery of LPS from the compounds was 40 − 95%. This suggests that these compounds inhibit the LAL procedure. By contrast, the adsorption method showed good LPS recovery (88 − 120%) in all cases, without being inhibited or enhanced by the compounds.

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