

Removal of an endotoxin fragment (lipid A) with an endotoxin-retentive filter

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ABSTRACT

Endotoxin-retentive filters are used to purify the dialysate used for hemodialysis, but endotoxin fragments whose molecular weight is below the molecular weight cut-off point of the filter may pass through the filter. The objective of the present study was to determine whether lipid A, an endotoxin fragment, is sufficiently removed by an endotoxin-retentive filter. A filtration test for lipid A was carried out using an endotoxin-retentive filter. The filtrate was tested for the presence of lipid A by a biochemical analysis: the *Limulus* lysate test and a bioassay: the lymphocyte stimulation test. The endotoxin-retentive filter removed lipid A to below the limit of detection by the *Limulus* lysate test. However, the filtrate stimulated lymphocytes, suggesting that a small amount of lipid A whose concentration was below the limit of detection by the *Limulus* lysate test had passed through the filter. In conclusion, the endotoxin-retentive filter was capable of removing lipid A to a concentration below the limit of detection by the *Limulus* lysate test but the filtrate still stimulated lymphocytes.

Keywords: Endotoxin-retentive filter; Endotoxin fragment; Lipid A; *Limulus* lysate test; Lymphocyte stimulation

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