Analysis of endotoxins removal from clarified cell lysates by divalent metal cations-induced aggregation

Abstract

In order to understand the role of divalent metal cations particularly Zn²⁺, Mg²⁺, and Ca²⁺ in endotoxin removal from clarified cell lysate solutions, the aggregation of endotoxins by these cations was explored in this work using dynamic light scattering, zeta potential analysis, and improved endotoxin assay. This work concludes that Zn²⁺ (as ZnSO₄) optimally binds to and increases the hydrodynamic size of endotoxins compared to Mg²⁺ and Ca²⁺. A low polydispersity index value measured after cation addition indicates the presence of homogenously suspended supramolecular endotoxin particles which calls for a centrifugal separation step for complete endotoxin removal.