Albumin inhibits adipogenesis and stimulates cytokine release from human adipocytes.

Abstract:
Bovine serum albumin (BSA) is commonly used in adipocyte experiments as a binding protein for fat-soluble substances. Therefore, it is of interest to investigate whether BSA per se is influencing the functioning of human adipocytes in vitro. In the present study, we investigated the potential of BSA to affect the proliferation and differentiation capacity of human preadipocytes. BSA was found to inhibit adipose differentiation in a dose-dependent manner (being significant at concentrations of 2.5 microM), whereas proliferation was not affected. We further investigated the effect of BSA on the secretory function of adipocytes focusing on the release of selected cytokines. Preadipocytes and freshly isolated adipocytes incubated with BSA secreted significantly higher amounts of IL-6, -8, and -10, and TNF-alpha compared with cells incubated without BSA. The effects on cytokine secretion seemed to reside at the level of gene expression because BSA increased TNF-alpha and IL-6 mRNA in a dose-dependent manner. The results of the present study indicate that the presence of BSA in the culture medium has considerable effects on adipocyte function in vitro. These effects should be carefully considered for in vitro studies of adipose tissue.

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