

# **Possible involvement of protein kinase C in the induction of adipose differentiation-related protein by sterol ester in lipid-laden RAW 264.7 macrophages.**

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摘要

## **Abstract**

The accumulation of lipid droplets in macrophages contributes to the formation of foam cells, an early event in atherosclerosis. It is, therefore, important to elucidate the mechanisms by which lipid droplets accumulate and are utilized. Sterol ester (SE)-laden RAW 264.7 macrophages accumulated lipid droplets in a time-dependent manner up to 16 h, which was enhanced by cotreatment with 0.1 microM phorbol 12-myristate 13-acetate (PMA). Inhibition of protein kinase C (PKC) activity by cotreatment with 0.3 microM calphostin C CAL for 16 h resulted in coalescence of small lipid droplets into large ones and increased accumulation of lipid droplets, although to a lesser extent than after PMA cotreatment. Immunostaining for adipose differentiation-related protein (ADRP) revealed a fluorescent rim at the surface of each medium to large lipid droplet. ADRP appearance correlated with lipid droplet accumulation and was regulated by PMA in a time-dependent manner. Induction of ADRP expression by PMA or CAL required SE, since ADRP levels in PMA- or CAL-treated non-SE-laden macrophages were comparable to those in untreated cells. Removal of SE from the incubation medium resulted in the concomitant dissolution of lipid droplets and down-regulation of ADRP. In conclusion, the above results suggest that ADRP may be an important protein in the regulation of lipid droplet metabolism in lipid-laden macrophages and that this regulation may be mediated by PKC activity. Copyright 2001 Wiley-Liss, Inc.