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Vitamin E ameliorates ox-LDL-induced foam cells formation through modulating the activities of oxidative stress-induced NF-κB pathway.

Huang ZG[1], Liang C, Han SF, Wu ZG.

Author information

1 Department of Cardiology, Changzheng Hospital, The Second Military Medical University, 415 Fengyang Road, Shanghai 200003, China.

Abstract

The role of antioxidant supplementation with vitamin E in the prevention of atherosclerosis has been a topic of considerable recent interest. The relevance of vitamin E for macrophage-derived foam cell formation, a hallmark of atherosclerosis, however, has not been unequivocally resolved. Here, we investigated the effect of oxidized LDL (ox-LDL) and vitamin E on lipid accumulation and total cholesterol content in U937 macrophages, reactive oxygen species generation and expression of nuclear factor-κB (NF-κB) signaling pathway. The results showed that the mRNA expression and protein levels of P-selectin were evident in U937 macrophages treated with ox-LDL and vitamin E, which indicating that expression of P-selectin is important in macrophage-derived foam cell formation. Moreover, P-selectin changes in ox-LDL-induced foam cell formation can be mediated by vitamin E through activities of nuclear NF-κB activated by serine phosphorylation of NF-κB inhibitor α, suggesting that activation of NF-κB pathway by macrophages may occur. Taken together, these data suggested that vitamin E can prevent ox-LDL-induced foam cell macrophages formation through modulating the activities of oxidative stress-induced NF-κB pathway.

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