

Abstract

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Coenzyme Q10 decreases TNF-alpha and IL-2 secretion by human peripheral blood mononuclear cells.

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OBJECTIVE: The beneficial effect of coenzyme Q10 (CoQ10) on human health occurs through various mechanisms including the possibility of immunomodulation. Therefore, the purpose of study was to examine the in vitro effect of CoQ10 on cytokine production and superoxide anion generation by human peripheral blood mononuclear cells (PBMC).

METHODS: 2×10^6 /mL PBMC obtained from 19 volunteers were incubated for 24 h without or with 0.6, 1.25, 2.5 and 5.0 μ M of CoQ10. The production of the following cytokines were examined: IL-1beta, IL-1ra, IL-6, IL-10, IL-2 and IFNgamma. Superoxide anion production was examined by incubation of 4×10^6 /mL cells with CoQ10 and 2×10^{-3} mM phorbol myristate acetate (PMA) for 60 min.

RESULTS: The production of the proinflammatory cytokines IL-1beta, IL-6 and IFNgamma and that of the anti-inflammatory cytokines IL-1ra and IL-10 by PBMC was not affected by CoQ10, whereas TNFalpha secretion was significantly decreased when the cells were incubated with 0.6 and 1.25 μ M of CoQ10. On the other hand, increasing doses of CoQ10 caused mild, but statistically significant inhibition of IL-2 secretion. The generation of superoxide anion by PBMC did not differ significantly between cells incubated with or without CoQ10 at concentrations between 0.3 and 5.0 μ M.

CONCLUSION: The results suggest that CoQ10 exerts a certain effect on cytokine production by PBMC related to its capacity to modulate human immune function.

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