Abstract

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Effects of exogenous vitamin A, C, E and NADH supplementation on proliferation, cytokines release, and cell redox status of lymphocytes from healthy aged subjects.

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OBJECTIVE: Aging is an inevitable biological event that is associated with immune alterations. These alterations are related to increased cellular oxidative stress and micronutrient deficiency. Antioxidant supplementation could improve these age-related abnormalities. The aim of this study was to determine in vitro effects of vitamin A, vitamin C, vitamin E, and NADH on T cell proliferation, cytokine release, and cell redox status in the elderly compared to young adults.

METHODS: Peripheral blood lymphocytes were isolated using a density gradient of Histopaque. They were cultured in vitro and stimulated with concanavalin A in the presence or absence of vitamins. Cell proliferation was determined by conducting MTT assays, and based on interleukin-2 and interleukin -4 secretions. Cell oxidant/antioxidant balance was assessed by assaying glutathione (GSH), malondialdehyde, carbonyl protein levels, and catalase activity.

RESULTS: The present study demonstrated that T-lymphocyte proliferation was decreased with aging and was associated with cytokine secretion alterations, GSH depletion, and intracellular oxidative stress. In the elderly, vitamin C, vitamin E, and NADH significantly improved lymphocyte proliferation and mitigated cellular oxidative stress, whereas vitamin A did not affect cell proliferation or cell redox status.

CONCLUSION: In conclusion, vitamin C, vitamin E, and NADH supplementation improved T-lymphocytes response in the elderly, and could contribute to the prevention of age-related immune alterations. Consumption of food items containing these vitamins is recommended, and further investigation is necessary to evaluate the effect of vitamin supplementation in vivo.

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