

Effects of supplementation with tocotrienol-rich fraction on immune response to tetanus toxoid immunization in normal healthy volunteers

ABSTRACT

Background/Objectives: Vitamin E is an essential fat-soluble vitamin that has been shown to induce favorable effects on animal and human immune systems. The objective of this study was to assess the effects of tocotrienol-rich fraction (TRF) supplementation on immune response following tetanus toxoid (TT) vaccine challenge in healthy female volunteers.

Subjects/Methods: In this double-blinded, placebo-controlled clinical trial, participants were randomly assigned to receive either placebo (control group) or 400 mg of TRF (study group) supplementation daily. Over the 2-month period of the study, volunteers were asked to attend three clinical sessions (that is, on days 0, 28 and 56) and blood samples were obtained from the volunteers during the follow-up. On day 28, all volunteers were also vaccinated with the TT vaccine (20 Lf) intramuscularly.

Results: The results from the clinical trial showed that TRF supplementation significantly increased the total vitamin E level in the plasma of the TRF-supplemented volunteers compared with the placebo group, indicating overall compliance. Volunteers supplemented with TRF showed a significantly ($P < 0.05$) enhanced production of interferon- and interleukin (IL)-4 by the mitogen or TT-stimulated leukocytes compared with the control group. Volunteers from the TRF group produced significantly ($P < 0.05$) lower amounts of IL-6 compared with the placebo group. Anti-TT IgG production was also significantly ($P < 0.05$) augmented in the TRF-supplemented group compared with the placebo group.

Conclusions: We conclude that TRF has immunostimulatory effects and potential clinical benefits to enhance immune response to vaccines.

Keyword: Tocotrienol-rich fraction; Tetanus toxoid; Immunostimulatory