



Beta-sitosterol and beta-sitosterol glucoside stimulate human peripheral blood lymphocyte proliferation: Implications for their use as an immunomodulatory vitamin combination

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Abstract

The phytosterols, β -sitosterol (BSS), and its glucoside (BSSG) enhance the *in vitro* proliferative response of T-cells stimulated by sub-optimal concentrations of phytohaemagglutinin (PHA) several fold at extremely low concentrations (femtogram level). A 100:1 (mass:mass) ratio of BSS:BSSG (termed essential sterolin formulation, ESF) showed higher stimulation than the individual sterols at the same concentration. *In vivo* activity of ESF was also demonstrated when volunteers ingested ESF for 4 weeks. Proliferation of their T-cells, stimulated maximally with PHA, was significantly enhanced (20–920%) when compared to baseline values.

In vitro, ESF (1 μ g/ml) was able to significantly enhance the expression of CD25 and HLA-Dr activation antigens on T-cells and increased the secretion, into the medium, of IL-2 and gamma interferon. NK-cell activity was also increased by BSS and BSSG alone, but with ESF a higher activity was always found at different effector:target ratios (100:1–12:1).