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Original Research Article

NK cell stimulation by administration of vitamin C and Aloe vera juice in vitro and in vivo: A pilot study

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Abstract

There is significant scientific investigation taking place into the function and the mechanisms of action of natural killer (NK) cells (NKC). Many plant extracts and vitamin supplements may play an immunoregulatory role by stimulating the functionality of the NKCs. The present study was designed to evaluate the in vitro and in vivo effects of vitamin C and Aloe vera juice on NK activity. In the in vitro experiments the activity of various concentrations of vitamin C (ranging from 3×10^{-3} M to 3×10^{-9} M) and Aloe vera juice (50 μ l) were examined in the modulation of the NKCs functionality, taken from blood samples collected from 12 healthy volunteers. The in vivo experiments were performed on 15 healthy volunteers, who took supplements of a combination of 1 g/day of vitamin C and 50 ml of Aloe vera juice for 45 consecutive days. The in vitro results showed that both substances increased NKC cytotoxicity against K562 cancer cell line. Furthermore, in the in vivo experiment the cytotoxicity of the NK was significantly increased compared to the pre-supplementation values ($p < 0.05$) under all three conditions tested. These results indicate that vitamin C and Aloe vera juice can modulate NK cells cytotoxicity and has the potential to enhance the immune system.

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Keywords

Ascorbic acid; Aloe vera juice; Immune system; Natural killer cells; Plant extract

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