

Gill, H.S., Rutherford, K.J., & Cross, M.L., (2001). Dietary probiotic supplementation enhances natural killer cell activity in the elderly: an investigation of age-related immunological changes. Journal of Clinical Immunology, 21, 264-271.

Abstract

Many elderly subjects are at increased risk of infectious and noninfectious diseases due to an age-related decline in lymphoid cell activity (immunosenescence). Noninvasive means of enhancing cellular immunity are therefore desirable in the elderly. Previous reports have suggested that dietary supplementation could represent an effective means of enhancing the activity of circulating natural killer (NK) cells in the elderly. In the present study, we have conducted a pre–post intervention trial to determine the impact of dietary supplementation with probiotic lactic acid bacteria (LAB) on peripheral blood NK cell activity in healthy elderly subjects. Twenty-seven volunteers consumed low-fat/low-lactose milk supplemented with known immunostimulatory LAB strains (*Lactobacillus rhamnosus* HN001 or *Bifidobacterium lactis* HN019) for a period of 3 weeks. A dietary run-in of milk alone was shown to have no significant effect on NK cells. In contrast, the proportion of CD56-positive lymphocytes in peripheral circulation was higher following consumption of either LAB strain, and *ex vivo* PBMC tumoricidal activity against K562 cells was also increased. Supplementation with HN001 or HN019 increased tumoricidal activity by an average of 101 and 62%, respectively; these increases were significantly correlated with age, with subjects older than 70 years experiencing significantly greater improvements than those under 70 years. These results demonstrate that dietary consumption of probiotic LAB in a milk-based diet may offer benefit to elderly consumers to combat some of the deleterious effects of immunosenescence on cellular immunity.