

Sheih, Y.H., Chiang, B.L., Wang, L.H., Liao, C.K., & Gill, H.S., (2001). Systemic immunity-enhancing effects in healthy subjects following dietary consumption of the lactic acid bacterium *Lactobacillus rhamnosus* HN001. Journal of the American College of Nutrition, 20 (2), 149-156.

Abstract

Objective: To determine the effects of the probiotic lactic acid bacterium, *Lactobacillus rhamnosus* HN001, on natural cellular immunity when delivered orally in normal low-fat milk (LFM) or lactose-hydrolyzed low-fat milk (LFM-LH).

Design: A three stage, pre-post intervention trial, spanning nine weeks.

Setting: Taipei Medical College Hospital, Taipei, Taiwan.

Subjects: Fifty-two healthy middle-aged and elderly volunteers (17 males, 35 females; median age 63.5, range 44–80).

Interventions: Stage 1 (run-in diet): 25g/200 mL reconstituted LFM powder, twice daily for 3 weeks. Stage 2 (probiotic intervention): LFM or LFM-LH, supplemented with 10^9 CFUs/g *L. rhamnosus* HN001 in each case, for 3 weeks. Stage 3 (wash-out): LFM for 3 weeks.

Measures of Outcome: *In vitro* phagocytic capacity of peripheral blood polymorphonuclear (PMN) leukocytes; *in vitro* tumoricidal activity of natural killer (NK) leukocytes.

Results: Immunological responses were unaffected by the run-in diet of LFM alone. In contrast, the relative proportion of PMN cells showing phagocytic activity increased by 19% and 15%, respectively, following consumption of HN001 in either LFM or LFM-LH; the relative level of NK cell tumor killing activity increased by 71% and 147%. In most cases these levels declined following cessation, but remained above baseline.

Conclusions: Dietary consumption of *L. rhamnosus* HN001, in a base of low-fat milk or lactose-hydrolyzed low-fat milk, appears to enhance systemic cellular immune responses and may be useful as a dietary supplement to boost natural immunity.