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A probiotic fermented dairy product improves immune response to influenza vaccination in the elderly

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The elderly respond poorly to influenza vaccination compared with younger adults⁽¹⁾. The aim of the study was to investigate whether daily consumption of a probiotic dairy product (Actimel[®]; Groupe Danone, Paris, France) could improve vaccination responses in the elderly.

In a multicentre placebo-controlled randomized double-blind study eighty-six elderly subjects (mean age 83 years) received Actimel[®] or acidified milk for 7 weeks. Consumption of the dairy product started 4 weeks before vaccination. The specific antibody levels against the three viral strains (H1N1, H3N2 and B) comprising the vaccine were measured 3 weeks after vaccination by a haemagglutination inhibition test, a semi-functional methodology validated by the WHO for influenza antibody measurement⁽²⁾.

Antibody levels against the three influenza strains were increased in elderly subjects consuming the probiotics compared with those consuming the acidified milk; however, these differences were not significant. A trend in favour of the probiotic group was also observed in relation to seroprotection against the H1N1 strain (64% of the subjects consuming probiotics showed seroprotection compared with 42.5% in the control group; $P=0.08$). Interestingly, two subpopulations were more responsive to the probiotic effect during vaccination, the free-living elderly and elderly women. In the free-living elderly population the probiotic dairy product significantly improved seroprotection against the H3N2 strain (16.2% more subjects in the probiotic group were H3N2-seroprotected compared with the control group; $P=0.02$) and significantly improved H3N2 seroconversion (27.3% more subjects in the probiotic group were H3N2-seroconverted compared with the control group; $P=0.05$). Among the women the probiotic group showed a significant increase in seroprotection against H1N1 (41.9% more subjects in the probiotic group were seroprotected; $P=0.02$) and a significant increase in H1N1 seroconversion (28% more subjects in the probiotic group were seroconverted; $P=0.02$).

The present study suggests that daily consumption of Actimel[®], a probiotic fermented dairy product, can improve immune responses to influenza vaccination, and in particular seroprotection in a population reacting poorly to the vaccination.

1. Cox RJ, Brokstad KA & Ogra P (2004) *Scand J Immunol* **59**, 1–15.

2. World Health Organization (2005) *Weekly Epidemiological Record* no. 33, p. 283. Geneva: WHO; available at <http://www.who.int/wer/2005/wer8033.pdf>