**Supplemental Materials**

*Dairy Intervention Without Vaccinations and Immunoglobulins*

There were 56 studies reporting on dairy exposure and impacts on immunoglobulins. The study authors reported dairy’s effects on IgA, IgD, IgE, IgG, and/or IgM levels measured in study populations before, during, and after treatment including whole dairy products (N=13), whole dairy products with added probiotics (N=34), whey or casein proteins (N=7), milk phospholipids (N=1), and dietary habits/patterns of dairy (N=1). Six studies incorporated an exercise regimen (1-6) to assess the ability of dairy products/components to mitigate known immune function decrements associated with intense exercise. No differences in immunoglobulin levels between treatment groups were reported in 2 studies (one involving milk phospholipid consumption and another involving maternal intake of yogurt, milk, or cheese) (7, 8) (Supplemental Table 3).

Whole dairy

Of the 13 whole dairy product studies of fermented milk, regular milk, and yogurt, 6 reported differences between the treatment arms for at least one immunoglobulin (IgA, IgE, and IgG) (1, 2, 9-12) (Supplemental Table 3).

One Taiwanese prospective cohort study evaluated 38 uninfected and 38 *H. pylori*-infected children given 200 mL probiotic yogurt with *L. acidophilus, Bifidobacterium lactis, L. bulgaricus, and S. thermophilus* twice daily for 4 weeks; the study year was not reported (12). In both uninfected and infected children, IgA levels were increased after 4 weeks (p=0.01, p=0.002, respectively).

In a trial conducted in Kenya, 4 treatment arms were reported (11). Two treatment groups were relevant for this review. Fifty healthy children were given 200 mL whole milk September-November 1998 and 250 mL whole milk January 1999 for 5 days per week for 1 year; 50 children were in the control group and did not receive treatment. Blood samples were collected in August 1998 and in August 1999. Increases in the *H. pylori* IgG antibody titers were observed in the milk group, compared with the control group (p<0.05).

Another trial evaluated the immunological effects of milk consumption in elderly Japanese adults: 8 were given 250 mL of milk during a bowling game (3 games per week for 1 year), while 5 were given 250 mL sports drink (same dose for 1 year) (1). This trial evaluated 3 time periods (April–October, the start; October–December, the first half of winter; and January-April, the latter half of winter); study years of enrollment and follow-up were not reported. A significant difference was observed in the rate of change of the salivary IgA concentration in the start period, compared to the first half of winter, with increases in the milk group and decreases in the sports drink group (p<0.05).

In a cross-over trial, 12 trained, national-level judo athletes in Cyprus engaged in 5 days of intense judo training on 2 separate training weeks; the athletes ingested 1000 mL water during the first week and then 1000 mL chocolate milk during the second training week (separated by a 14-day washout period) (2). Time period of enrollment and follow-up was not reported. While increases in IgA secretion rate were observed for both training weeks (p=0.02), there was no significant difference between treatment periods.

In a single-arm trial, 15 Japanese individuals with perennial allergic rhinitis and other allergic symptoms were given 200 mL milk daily fermented with *L. gasseri* TMC0356for 4 weeks (10). Time period of enrollment and follow-up was not reported. Serum total IgE and IgE specific to Acari or Japanese cedar pollen were significantly reduced at 4 weeks, compared to pre-intervention levels (p<0.05 for all 3 outcomes).

In the New Guinea trial discussed previously, lower IgM levels were observed in the skim milk powder group compared to the control (n= 30 and 24, respectively; p=0.02) after 2 weeks of intervention (9).

Whole dairy products with added probiotics

Among the 34 studies of whole dairy products with added probiotics, one evaluated the impact of *B. lactis* BB12on immunoglobulins (13), while the remaining 33 investigated the effects of various *Lactobacillus* strains added to whole dairy products (including *L. paracasei ssp., L. casei 431, L. casei, L. acidophilus, S. thermophilus, L. casei Shirota, L. gasseri* CECT5714*, and L. coryniformis* CECT5711*;* see Supplemental Table 3 for details on the probiotic strains). Elevation of IgA was observed with probiotic intervention.

In a cross-over trial, 26 healthy women in India were given traditional yogurt daily for the first week, probiotic yogurt with *B. lactis* Bb12 daily for the subsequent 3 weeks, and then traditional yogurt for the next 4 weeks (13). Time period was not reported. Compared to baseline levels, secretory IgA in stool was increased with the probiotic intervention (p=0.02).

For the remaining 33 studies of different *Lactobacillus* strains, geographical locations included Asia, Europe, North America, and South America; wide variability was observed in the results for the different immunoglobulins across age (adults, children, elderly) and health status (healthy, allergic, or hospitalized/assisted living), with no clear effects or patterns identified for the different immunoglobulins (Supplemental Table 3).

Whey or casein proteins

Seven studies were identified with whey or casein protein intervention and subsequent immunoglobulin assessment (14-20). Three studies reported differences across the comparison groups for at least one immunoglobulin type (IgA and IgE) (16, 17, 19); no consistent direction of change was observed. The remaining four trials reported no significant differences between the comparison groups (Supplemental Table 3).

In a trial of Japanese adults with rheumatoid arthritis, 20 were administered whey protein (1 packet of 6 g whey protein daily for 3 months) and 18 were not treated (16). Time period was not reported. Serum IgA anti- lipopolysaccharides (LPS) antibody levels were higher in the responder group vs. non-responder group of the intervention arm (p<0.05).

A single intervention arm trial was conducted in 2002 of 11 Canadian children with atopic asthma. The children were given 10 g of whey protein HMS90 twice daily for 1 month (17). IgE was significantly decreased at 1-month post-supplementation (p=0.02).

A trial of adult cancer patients was conducted in Thailand; time period was not reported (19). Twenty-four patients were given 40 g whey protein isolate with 2.64 mg Zinc and 0.76 mg selenium daily for 12 weeks, while 24 were not treated. Increases in IgE at week 6 and at week 12 were observed among the intervention arm compared to the untreated arm (p<0.05, both time periods).

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