

A pilot study investigating the effects of yakult fermented milk drink (*L. casei* Shirota) on salivary IFN- γ , sIgA, IgA1 and IgA2 in healthy volunteers

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This pilot study investigated the effects on salivary cytokine and sIgA before and after daily consumption of *Lactobacillus casei* Shirota (LcS) in nine healthy adult volunteers. Subjects were asked to consume two bottles each day of a fermented milk drink containing a total of 1.3×10^{10} live cells of LcS (Yakult), for 4 weeks. Volunteers were asked to avoid food and drink for at least 1 h before morning unstimulated saliva samples were collected over a 5 min period. Samples were collected at baseline, at week 1, 2 and 4 of LcS consumption, and 2 weeks after cessation of consumption. We found a significant transient increase in salivary IFN- γ levels, but were unable to detect IL-12, and an increase in salivary sIgA, IgA1 and IgA2 secretion. Baseline salivary IFN- γ was below the assay detection limits. However, at week 1, 4/9 subjects had detectable salivary IFN- γ levels, 8/9 ($P < 0.01$) at week 2 and 3/9 at week 4. None had detectable IFN- γ levels at week 6. IFN- γ concentrations ranged from 35.3 to 92.0 pg/ml. There was a significant ($P < 0.02$) increase in salivary sIgA secretion rate at week 4 (Fig. A). At week 6, the sIgA secretion rate was greater than baseline. The IgA1 secretion rate was significantly greater than baseline at week 4 ($P < 0.05$) and week 6 ($P < 0.02$) (Fig. B). The IgA2 secretion was also significantly increased at week 4 ($P < 0.05$) and week 6 ($P < 0.01$) (Fig. B) and the IgA1:IgA2 ratio significantly greater at week 2 ($P < 0.01$). This pilot study demonstrates that LcS can induce increased salivary IFN- γ , sIgA, IgA1 and IgA2 secretion in healthy adults, which may improve mucosal immunity in the upper respiratory tract and provide health related benefits. A larger detailed study investigating cytokine networks, immunoglobulins and T cell responses in different immune system compartments in parallel with a placebo control group would define more rigorously and precisely the immunological effects of LcS (Yakult).

Figure A

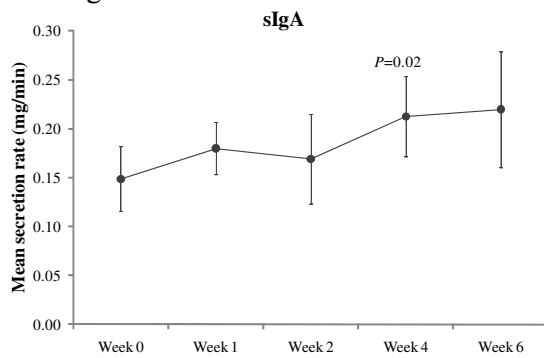


Figure B

