Popular Home-Made Fermented Milk Improves Nutritional and Immunological Responses against Influenza Vaccination in Handicapped Japanese

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Objectives

- WHO warns the pandemic of a new avian influenza to which the elderly and children are vulnerable.
- In handicapped children, influenza vaccination is less effective because impaired immunity.
- Therefore, the effect of a popular home-made fermented milk (yogurt) with Lactococcus Lactis subsp. cremoris FC.(FC) was studied in handicapped persons, since we previously observed the immunopotentiation of the vaccination and nutritional improvement by a commercial LC1 yogurt in the elderly inmates of a nursing home.

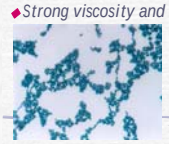
Methods

- Subjects: From among 35 males and 26 female patients aged 15-72 with severe motor and intellectual disabilities, 60 patients were vaccinated against influenza virus (H1N1, H3N2).
- Test Yogurt Fermented milk manufactured with only one starter culture of FC.
- Placebo Yogurt Non-fermented gelled milk with similar texture, acidity and taste.
- Blood analyses :General laboratory tests, trace element, pre-albumin, albumin, serum protein, antibody title against influenza, and high sensitivity C-reactive protein (CRP) of fasting blood.
- A double-blind placebo controlled randomized study approved by an Ethical Committee.

Test Yogurt

- A yogurt sample, so called Caspian sea yogurt now widely home-made in Japan was brought back by Dr. Yamori in 1986 from a longevity village in the Caucasus region for the nutrition analysis of WHO coordinated Cardiovascular Diseases and Alimentary Comparison (CARDIAC) study.

- Strong viscosity and less acidic taste are liked by Japanese people.

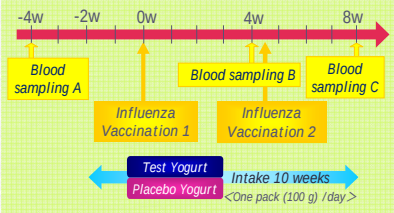


- The number of viable cells of FC was more than 7.3 x 10^7 CFU/g after two weeks of storage at below 10℃.

Nutritional Contents of Test Yogurt and Placebo (100g)

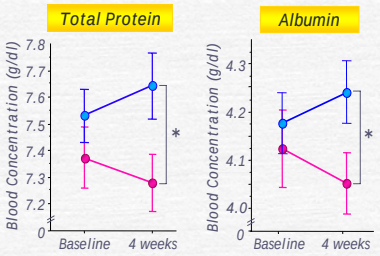
	Test yogurt	Placebo
Energy (kcal)	68	76
Fat(g)	4.0	3.7
Protein (g)	3.4	3.5
Na (mg)	43	61
Dietary fiber (g)	0	0.8

Protocol



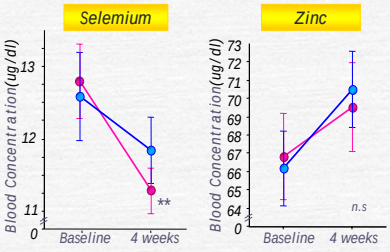
Vaccination 1 : All patients. (n=60)
Vaccination 2: Patients with serum antibody titer to H1N1 or H3N2 < 40 at blood sampling B. (n=40)

Changes in Total Protein and Albumin



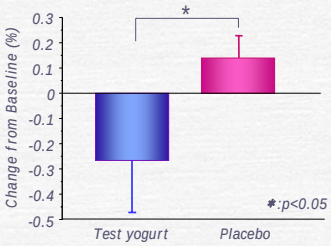
Test yogurt Placebo *:p<0.05

Changes in Selenium and Zinc



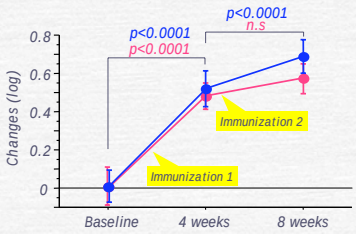
Test yogurt Placebo **:p<0.0001 vs Baseline

Changes in High Sensitivity CRP



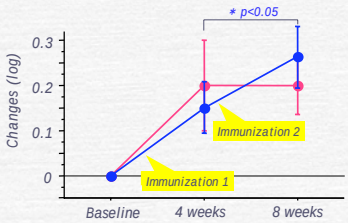
CRP =C-Reactive Protein

Effect of Test Yogurt on Antibody Titer against H3N2



Test yogurt Placebo All patients.

Effect of Test Yogurt on the Serum Antibody Titer to H1N1



Patients with serum antibody titer against H1N1 < 40 at blood sampling B.

Test yogurt Placebo

Conclusions

- Daily intake of 100g yogurt (Lactococcus lactis subsp, cremoris FC.) could improve the intestinal nutrient absorption and induced the immunopotentiation in handicapped persons, vulnerable to influenza.
- The down-regulation of inflammatory CPR suggests the yogurt intake may contribute to prevention against atherosclerosis in which inflammatory cytokines are involved.

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