

Comparison between traditional yogurt and probiotic yogurt in non-inflammatory acute gastroenteritis

To the Editor

I read the interesting study by Heydarian et al¹ on the comparison between traditional and probiotic yogurt in non-inflammatory acute gastroenteritis. Probiotics have received a considerable attention over the past years, as they were investigated to gain a possible role as an adjunctive treatment of irritable bowel syndrome, traveler's diarrhea, Crohn's disease, acute infectious diarrhea, antibiotic-associated diarrhea, short bowel syndrome, atopic dermatitis, food allergies, human immunodeficiency virus, and cancer. Some of these probiotics showed promising results. Recommendations for probiotic supplementation in the pediatric population are often conflicting due to limited research in many pediatric diseases. I have 5 comments on the aforementioned study.

First, the pattern of feeding is an important variable, ought to be considered by Heydarian et al¹ as it might influence their conclusion. Heydarian et al¹ did not address the pattern of feeding in the studied patients, in particular infants. The probiotic potential of lactobacilli strains isolated from breast milk is, at least, similar to that of the strains commonly used in commercial probiotic products.² Thus, probiotics present in breast milk and yogurt could have additive synergetic effect. This may partly explain the superiority of probiotic yogurt on the traditional yogurt in non-inflammatory acute gastroenteritis as stated by Heydarian et al.¹

Second, malnutrition was found to be associated with a significant impairment of cell-mediated immunity, phagocyte function, complement system, secretory immunoglobulin-A antibody concentrations, and cytokine production. Deficiency of a single nutrient could also result in altered immune response. This is observed even when the deficiency state is relatively mild. Considering that probiotics exert their beneficial effects in gastroenterology through various mechanisms, including lowering intestinal pH, decreasing colonization and invasion by pathogenic organisms, and modifying the host immune response.³ The inclusion therefore, of patients with mild-moderate malnutrition, and exclusion of those with severe malnutrition in the Heydarian et al's¹ study seem questionable.

Third, Heydarian et al¹ stated in their methodology that the probiotic yogurt group received 100 cc/day for 5 days. Probiotic yogurt consisted of 10⁹ CFU/dose *Lactobacillus bulgaricus*, *Lactobacillus acidophilus*, *Bifid*

bacterium, and *Streptococcus thermophilus*. Heydarian et al's¹ conclusion discloses 2 points: 1. It is difficult to confidently determine which probiotic exert its positive effect on improving non-inflammatory acute gastroenteritis. It seems most likely that action is related to the additive effects of the combined 3 probiotics, 2. The beneficial effect of probiotics is not only strain-dependent, but also dose-dependent, with doses of at least 10 billion/dose being necessary to become effective.

Fourth, the superiority of probiotic yogurt on traditional yogurt in non-inflammatory acute gastroenteritis as stated by Heydarian et al¹ triggers an important question: Is that conclusion clinically applicable? The answer requires 2 considerations: 1. Heydarian et al¹ administered probiotic yogurt to the studied patient in a course of few days, and therefore, unwanted effects were not expected to appear. However, some concerns are present considering the safety of probiotics, particularly on long-term use. Though probiotics are generally considered safe and well-tolerated, they should be used cautiously in patients who are critically ill or severely immunocompromised, or those with central venous catheters.³ Septicemia and fungaemia have been reported in high risk situations. Probiotics were also found to cause gut mucosal inflammation with decreased hemoglobin values during intervention that was corrected after halting the supplementation.⁴ 2. The cost-effectiveness of probiotics must be considered as effective probiotic treatment is unlikely to be cheap. Until more conclusive data are available considering the cost-effectiveness and safety of probiotic yogurt, traditional yogurt remains the popular and traditional adjunctive remedy to treat acute diarrhea in children, particularly in low income families.

Fifth, zinc supplementation has demonstrated a significant reduction of fecal excretion, duration, severity, and persistency of diarrhea. Moreover, it might improve immune status, intestinal permeability, epithelial and enzymatic functions, and transport of electrolytes.⁵ The use of a probiotic yogurt supplemented with zinc might thus, theoretically improve the treatment and outcome of diarrhea worldwide. This deserves extensive studies for confirmation.

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Reply from the Author

Many thanks to Prof. Al-Mendalawi for his special attention to our work. The following should also be considered:

According to our results and some other studies, probiotics can have some beneficial effects.^{1,6} In our study, baseline characters' including feeding pattern was similar, and there was no significant differences in both groups in feeding pattern. As mentioned by Prof. Al-Mendalawi, probiotics in immuno-compromised patients may have potential risks. However, we exclude cases with severe malnutrition from the study. On the other hand, probiotics can regulate immune responses,⁷⁻¹⁰ so patients with mild to moderate malnutrition were included in our study.

We found that 100 cc/day for 5 days of probiotic yogurt consisting of *Streptococcus thermophilus*, *Lactobacillus bulgaricus*, *Bifid bacterium*, and *Lactobacillus* with 10⁹ CFU/dose was effective,¹ and other studies showed the efficacy of probiotic.^{6,10} It maybe in some extent due to the synergetic effects of these different strains. But in future studies, the effect of the administration of just one strain of probiotic can be evaluated.

In our study, probiotics were taken for a few days, so evaluation of long term complication(s) require further studies, in which probiotics were taken for a longer period. To avoid some serious complications in immuno-compromised cases, patients who suffered from severe malnutrition were excluded in our study.

In our country, probiotic yogurt is available, and is not expensive in comparison with the traditional yogurt. Finally, the effects of the combination of probiotics and zinc in the treatment of acute diarrhea can be studied in the future.

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