

None were malnourished. Severely dehydrated children were given a bolus of intravenous fluids before oral therapy was begun. All children were given either  $1 \times 10^{10}$  LGG (N=31) or placebo (N=30) at the onset of oral rehydration therapy and the dose continued at twice daily until diarrhea ceased or up to 7 days. Patients were kept in a metabolic unit and oral intake and stool output was measured until diarrhea resolved (12 hours with no stool or 2 formed stools passed). After 72 hours 20% of treated children had diarrhea compared to 32% of controls. At 96 hours these percentages dropped to 13 and 23 respectively. Small sample size prevented extensive statistical comparison. The previously described benefits of LGG in diarrheal disease in Western European children probably extend to the more dehydrating illnesses seen in tropical countries.

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# PROPHYLACTIC ADMINISTRATION OF LACTOBACILLUS GG TO CHILDREN IN A DAYCARE CENTER.

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Dissemination of diarrhea and infectious disorders is a common problem in daycare centers especially in developing countries. Certain probiotics including Lactobacillus GG (LGG) have immune enhancing properties which might be useful in reducing infectious diseases in this setting. We therefore instituted a double blind placebo controlled study in a daycare center in northeastern Brazil that provides care to lower socioeconomic children at high risk for diarrhea. Sixty-one children and 58 age matched controls, mean age 16.5 months, were randomly assigned to receive LGG  $2 \times 10^{10}$  or placebo daily in room temperature fruit puree. Diet was unchanged and study staff verified consumption. Daily stool number and consistency and other gastrointestinal symptoms were monitored and recorded daily by objective study staff for two months. Frequency of diarrheal episodes between the first and second months of treatment was compared. Diarrhea was defined as 3 or more watery stools per day. In the treatment group there was a 75% reduction in diarrheal episodes ( $p < 0.0001$ ) between months and a 60% reduction in the placebo group ( $p < 0.015$ ). Administration of probiotics to many at risk children in a given population is an effective means of reducing acute diarrhea, even if all children are not treated. We speculate that addition of probiotics to widely available food products may have a beneficial effect in reducing the incidence of diarrheal illness.

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# EFFECT OF ORAL SUPPLEMENTATION WITH AND WITHOUT SYNBIOTICS ON CATCH-UP GROWTH IN PRESCHOOL CHILDREN.

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**Objectives:** This study was designed to evaluate incidence and duration of sickness in mild to moderately malnourished children who received a nutritional supplement, with (PS) and without (P) synbiotics (L. acidophilus, B. infantis and FOS) and to determine GI tolerance and growth.

**Methods:** Children 1 to 6 years of age, between -1 SD and -3 SD from the median of weight-for-height (W/H) received PS or P in a double-blind, randomized, parallel-design study. Incidence and duration of sick episodes, sick episodes requiring antibiotics, supplement intake, and stool frequency and consistency were evaluated at monthly visits for four months. Height, weight and adverse events were monitored.

**Results:** A total of 626 subjects completed the study (310 PS, 316 P) out of 668 enrolled in Brazil, Mexico, Spain, and Portugal. The number of sick days per month decreased significantly during the study for both groups ( $p < 0.001$ ). The decrease in the number of sick days over time was more pronounced for younger children (1-2 years of age) than for older children ( $p < 0.001$ ). Both feeding groups experienced catch-up growth, with a significant increase ( $p < 0.001$ ) in normalized percentiles for weight, height and W/H. There were no significant differences between feeding

groups for sick episodes or sick days. However, the number of sick days for subjects 3-5 years of age with at least one sick episode was lower in the PS group ( $p = 0.047$ ). Younger children (1-3) had more sick days/episodes. Constipation days were fewer in the PS group ( $P = 0.02$ ).

**Conclusions:** Mild to moderately malnourished children, supplemented with complete, balanced nutrition, experienced catch-up growth and reduced sick days. PS reduced sick days among subjects 3-5 and constipation when compared to P. Both study products were well tolerated.

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# USE OF FERMENTED FOODS TO COMBAT STUNTING AND FAILURE TO THRIVE.

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With the adoption of vigorous "child survival strategies" including oral rehydration infant and child mortality in India has significantly declined even among the poorest undernourished segments of the population. Most of the surviving children however continue to remain stunted and undernourished and fail to thrive. As a result of this expanding pool of substandard survivors, as high as 52% of India's under-fives are presently stunted.

The present study is based on the hypothesis that in many stunted children failure to thrive is due to the damage to the gut epithelium incurred during repeated bouts of gastrointestinal disorders resulting in impaired gut mediated immunity, poor absorption and poor appetite. Promoting the regeneration of the damaged gut epithelium through the use of (probiotic lactobacillus rich) fermented foods could under the circumstances yield beneficial results. This low cost procedure will be feasible even in poor households and is capable of wide application among poor communities.

The paper presents the result of a study on fifty stunted under-fives from the slums of Delhi divided into two groups- one receiving a daily feed of fermented food supplement and the other being the control on iso-caloric regime. The comparison of the anthropometric performance and morbidity profile of the two groups over a four-month period of supplementation will indicate the beneficial results of probiotic supplementation.

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# EFFECT OF 3 DOSES OF FRUCTO-OLIGOSACCHARIDES IN INFANTS.

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Prebiotics are often confounded with Probiotic bacterias particularly Bifidus which have been proved to protect infants against acute diarrhea and to decrease shedding of Rota virus.

It would be cheaper to use Prebiotics than Probiotics, but effects of Prebiotics have not been demonstrated in infants and have potential side effect. After mothers signing informed consent, 53 infants 7 to 20 days of age were randomised in 4 groups to receive 4 different supplements in 5 bottles of formula per day for 2 weeks. The supplements content was unknown from mothers and paediatricians. Each vial contain respectively 200 mg of lactose, 200, 400 or 600 mg of fructo- oligosaccharide (FOS, Eridiana Beghin Say). Babies were weekly examined and weighed. Number and aspect of stools, diaper rash, spitting up, vomiting, formula consumption and side-effects ( loose stools or colics) were noted daily by mothers. Stools were sampled before the start, the last day and two weeks after the end of supplementation to measure pH and number Bifidus. 47 files were completed and 13 babies received 1 g/day of lactose, 11 received 1 g/d of FOS, 11, 2 g/d of FOS and 12,3 g/d of FOS.

**Result:** lowering of stool pH, bifidogenic activity of FOS, frequency of diaper rash and colics were not statistically significantly different. The only statistically significant difference was seen on the number of stools with the lowest number in the group receiving 1g/d of lactose and the highest number in the group receiving 3 g/d of FOS.

**Conclusions:** no bifidogenic effect was observed nor any stool pH lowering even with the highest dose of FOS may be due to an insufficient number of infants. However there was no trend of dose effect relationship. The number of stools was significantly increased with 3 g/d of FOS showing that the dose of 3 g/d of FOS in infants less than 3 months of age may be the maximum acceptable dose.

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