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ABSTRACT: ***Dairy products supplemented with probiotic strains are the forerunners of functional foods. Currently, the efficacy and safety of products based on multiple strains and/or multispecies is the subject of growing interest. Such combinations are considered to have either a wide range of effects or a more specifically targeted function in the human alimentary tract. The importance of adequate research on the individual strains and a final combination cannot be over-emphasized. This review describes the development of a multispecies probiotic combination which is formed by two Lactobacillus rhamnosus strains, GG and LC705, one Propionibacterium freudenreichii spp. shermanii, strain JS, and the Bb12 strain of Bifidobacterium animalis ssp. lactis. In vitro adhesion, immunological characteristics and mycotoxin binding by the four strains, individually and in combination, are described, as well as the intestinal survival of the strains. In clinical trials, the multispecies combination reduced symptoms and improved the quality of life in irritable bowel syndrome patients. The multispecies probiotic combination also showed beneficial effects when used as an adjunct to antimicrobial Helicobacter pylori eradication therapy. The multispecies combination forms a promising probiotic preparation with potential to alleviate complex non-infectious disorders that have large societal and economic impacts.***

ABSTRACT: ***Regardless the pathogen, acute infectious diarrhea can result in severe and even fatal dehydration and electrolyte imbalances in children. The purpose of this literature review is to determine the effect of probiotics in reducing the duration of acute infectious diarrhea specifically in children (age < 18 years) when compared to standard oral rehydration therapy (ORT) and/or placebo. Eleven randomized controlled trials published between 2004-2009 met specific inclusion criteria and were included in this review. Seven (63.6%) of eleven studies were able to show probiotics as being effective in decreasing the duration of acute infectious diarrhea, with the two most effective probiotics in shortening the duration of diarrhea being Lactobacillus rhamnosus GG and Saccharomyces boulardii. However, due to the heterogeneity of the studies evaluated, no particular probiotic can be recommended at this***

time. Therefore, additional research is necessary to determine which probiotic, Lactobacillus rhamnosus GG or Saccharomyces boulardii, is more effective in shortening the duration of acute infectious diarrhea in children. The goal of future randomized controlled trials is the creation and design of useful, evidence-based, population specific clinical guidelines for probiotic treatment regimens in children.

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193-202 **DIVERSITY OF BACTERIAL PROBIOTICS IN TRADITIONAL FERMENTED FOODS OF WESTERN HIMALAYAS**

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ABSTRACT: *Diversity of 102 bacteria isolated from various fermented foods and alcoholic beverages of Western Himalayas was studied with respect to probiotic potential, and out of these, eleven isolates were selected as potential probiotics for further study. These isolates were found to be intrinsically tolerant to upper gastrointestinal transit and this property was isolate dependent. Reduction in viability (in terms of log CFU/mL) was more in simulated gastric juice of pH 2 as compared to pH 3 and 4. These isolates were investigated for surface hydrophobicity as determined by adhesion to different hydrocarbons such as n-hexadecane, xylene and toluene. Most of the isolates showed good degree of adhesion property (52.66 - 79.69 %) in n-hexadecane and autoaggregation ability (51.15 - 87.69 %). Conventional characterization identified these isolates as belonging to two genera viz., Enterococcus and Lactobacillus. Whereas, on the basis of 16S ribosomal gene sequence analysis, four isolates were identified as Enterococcus faecium, one as Bacillus coagulans, three each as Lactobacillus plantarum and Lactobacillus fermentum.*

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203-210 **SYNBIOTIC EFFECTS OF GALACTO-OLIGOSACCHARIDE, POLYDEXTROSE AND BIFIDOBACTERIUM LACTIS Bi-07 IN VITRO**

H Mäkeläinen, N Ottman, S Forssten, M Saarinen, N Rautonen, and AC Ouwehand

ABSTRACT: *Synbiotics are used to manipulate the endogenous microbiota, but whether they are more effective than the constituting pro- and prebiotics alone remains to be determined. The objective of this work was to evaluate galacto-oligosaccharide (GOS), polydextrose (PDX) and Bifidobacterium lactis Bi-07 alone and in combinations in a simulated human colon model. Their effects on the microbial community structure and activity were analysed with flow cytometry, qPCR and chromatographic methods. Probiotic B. lactis was bifidogenic, but had only minor effects on the metabolites produced in the colon model. Prebiotic GOS increased the bifidobacteria, whereas PDX had negative effects on the B. lactis and Clostridium numbers. The prebiotics differed in their effects on the metabolite production. Synbiotic GOS+B lactis increased the levels of Bifidobacterium and decreased the numbers of Lactobacillus, Bacteroides and clostridia, and thus, had more effects on the microbial community structure than the constituting components alone. Also the combination of PDX+GOS+B.lactis had similar beneficial effects on the microbiota and in addition, the two oligosaccharides benefited the production of short-chain fatty acids on the whole length of the colonic model. In this study, the synbiotics including GOS were more effective than the constituting pro- or prebiotics alone in modulating the microbiota composition.*

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ABSTRACT: ***A synbiotic yoghurt based on a combination of soymilk and yacon water extract (from yacon root tubers) was developed as a novel food product fermented with a probiotic culture of Enterococcus faecium CRL 183 and Lactobacillus helveticus ssp jugurti 416. Response surface methodology (RSM) was used to optimize the independent variables soymilk protein concentration and percentage of yacon extract in the formulation through a Central Composite Rotatable Design (CCRD), consisting of a 2^2 factorial design with two levels (-1, +1), two central points (0) and four axial points (± α, 0) (0, ± α). The responses were assessed by consumer acceptance tests. The optimization indicated that a formulation with a soymilk protein concentration of 1.74 g/L and 25.86% of yacon extract gave the best average values, 5.91 for the "taste" and 6.00 for the "overall impression" responses. The formulation with 40% of yacon extract and the same concentration of soymilk protein achieved similar acceptance values: "taste" (5.94) and "overall impression" (5.87), however, with the extra yacon, it probably had a greater content of prebiotic fructooligosaccharides. Consequently, both formulations may give useful functional foods, with sensory properties comparable with those of soy yoghurt (control formulation).***

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ABSTRACT: ***The objective of this study was to evaluate the perception and the attitudes towards the probiotic foods of the Indian population. A total of five hundred and fifty one (100%) people were interviewed in three major cities in India using a structured simple questionnaire format. One hundred and five (19.09%) people defined probiotic foods correctly, whereas three hundred and twenty one (58.18%) admitted of not having heard about probiotic food. Socioeconomic status had no impact on the mindset of the consumers. The result of this study suggests the need for a basic, easy to understand educational programs in order to create awareness related to these products. Furthermore the study is of value in devising appropriate strategies for awareness and penetration of probiotic foods amongst Indian consumers by both private companies and government agencies.***

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ABSTRACT: ***Consumption of milk containing Lactobacillus rhamnosus GG (LGG) has been shown to reduce caries risk in children. We examined whether long-term consumption of juice containing LGG and calcium lactate glugonate (CaLG) affects the caries risk in a double-blind, placebo-controlled setting. The study comprised 530 healthy children, aged 3-6 years. They consumed 5 days a week for 7 months either carrot-pineapple juice containing LGG (Valio Ltd, Finland; $5x10^6$ cfu/ml) and CaLG or control juice. The children's oral health status was assessed at the baseline and in the end of the study, and salivary Streptococcus mutans counts four times during the study. The caries risk and the need for dental care increased, and high S. mutans counts decreased in both study groups. At the end of the study, the caries risk was not lower (baseline-adjusted OR=0.71, 95% CI 0.38-1.32, p=0.281), but the need of dental care was smaller (baseline-adjusted OR=0.58; 95% CI 0.34-1.00; p=0.050), and there were more children who had all the six sextants healthy (baseline-adjusted OR=1.69, 95% CI 0.99-2.89; p=0.056) in the LGG-CaLG juice group compared to the control juice group. To conclude, supplementation of juice with LGG and CaLG might be beneficial for dental health in children.***

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229-236 **PLANT POLYSACCHARIDE SUPPLEMENTS REDUCE THE EXPRESSION OF PRO-INFLAMMATORY GENES IN COLONIC TISSUE OF MICE WITH DEXTRAN SULFATE SODIUM-INDUCED COLITIS**

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ABSTRACT: ***Oral ingestion of polysaccharides can elicit immunomodulatory effects, both systemically and in the gut, but their mechanisms of action are not well understood. In a recent study, two aloe vera gel-based mixed polysaccharide dietary supplements (A and B) protected rats against dextran sulfate sodium (DSS)-induced ulcerative colitis (UC). To better understand the mechanisms by which these supplements protect against colonic inflammation, we examined the effect of supplement feeding, with exposure to 5% DSS during the last eight days, on colonic gene activity in mice. DSS exposure without supplement feeding induced symptoms of colitis and potently increased expression of genes associated with inflammation, immune cell activation, and pathogen recognition and signaling. Feeding of supplements reduced DSS-induced disease activity, partially prevented colonic shortening, and reduced the expression of colonic pro-inflammatory, immune cell activation, and pathogen-recognition and signaling genes. Interestingly, ingestion of supplement A down-regulated the expression of several genes associated with inflammation, and decreased the expression of genes associated with cell activation in healthy animals. This study demonstrates that DSS-induced colitis results in induction of several genes responsible for inflammation and that ingestion of these polysaccharide supplements can ameliorate some of the symptoms of colitis, possibly through suppression of these genes.***