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Probiotic Properties Of Some Lactobacillus Strains  
AHMED M. MABROUK, BAHER A. EFFAT, ZAINAB I. SADEK,  
GEHAN A.M. HUSSEIN AND MOHAMED N.I. MAGDOUB  

ABSTRACT: Fourteen Lactobacillus strains were examined in vitro for their probiotic potential. In antimicrobial activity assay, the lactobacilli tested showed inhibitory properties toward selected potential harmful microorganisms. Gram-positive indicator bacteria were most inhibited. Only a few strains were able to survive at pH 2, while all were unaffected by pH 3. The strains showed the survivability (57.15%) at high bile salt concentration (1% oxigall). Only, 50% of stains were resistant to 0.3% phenol, while, all strains were sensitive to high concentrations of phenol (0.5%). All strains showed good acidification activity and were susceptible to chloramphenicol, erythromycin and amoxicillin. Only, one strain (L. curvatus NBIMCC3452) produced exopolysaccharides. In conclusion, six strains, L. johnsonii NRRL B-2178, L. casei NRRL B-1922, L. hilgardii NRRL-1843, L. cuvatus NBIMCC 3452, L. salivarius NBIMCC–1589 and L. reuteri NBIMCC1587, were found in vitro, to possess desirable probiotic properties.

185-194  
Acid And Bile Tolerance, Adhesion Properties And Anti-Pathogenic Effects Of Three Potential Probiotic Strains  

ABSTRACT: The probiotic properties of lactic acid bacteria (LAB) are vital in the selection, and potential application, of strains targeted to improve the health of individual consumers. Characteristics of particular interest include the ability to withstand conditions encountered during transit of the upper gastrointestinal tract and anti-pathogen activity (both inhibitory activity in relation to pathogenic growth and adhesion). The aim of the current work was to investigate the probiotic properties of Lactobacillus acidophilus 74–2, Lactobacillus casei 163 and Bifidobacterium animalis subsp. lactis 420. Overall, L. casei 163 was more sensitive to acidic conditions and the presence of bile, than L. acidophilus 74–2 and B. animalis subsp. lactis 420. However, L. casei 163 displayed greatest inhibition of pathogenic growth against both Escherichia coli EPEC 862 and Salmonella enteritidis NCTC5765. All three LAB strains significantly reduced pathogen adhesion to HT29 cells, whether added to the cell lines before the pathogens (exclusion assay) or together (competitive assay).

195-202  
Chemopreventive Effect Of Probiotic Dahi (Curd) Containing Lactobacillus Acidophilus And Lactobacillus Casei On 1,2 Dimethyhydrazine Induced Colon Carcinogenesis In Rats  
NIKHLESH KUMAR SINGH, ARVIND KUMAR, AND P. R. SINHA
ABSTRACT: We investigated the effect of low fat (2.5%) probiotic dahi containing Lactobacillus acidophilus and Lactobacillus casei on 1, 2- dimethylhydrazine induced colon carcinogenesis in rats. Colon cancer was induced in male albino Wistar rats by subcutaneous injection of 20 mg 1, 2–dimethylhydrazine (DMH) /kg body weight, weekly during 15 weeks. At the end of 18 weeks all the rats were sacrificed and body weight, total no. of aberrant crypts (AC), total no of aberrant crypt foci (ACF) and no. of aberrant crypts per foci were recorded. The oxidative stress in terms of thiobarbituric acid reactive substances (TBARS), glutathione–S–transferase (GST), catalase (CAT) and superoxide dismutase ((SOD) in liver and colon tissues were also measured. A significant inhibition in the development of total no of ACF were observed in animals fed probiotic dahi as compared with those fed the control diets (P<0.01). In addition, total number of aberrant crypts per colon was also significantly reduced in animals fed the probiotic dahi as compared with the animals fed control diet (P <0.01). The feeding of probiotic dahi to rats significantly enhanced the activity of glutathione–S–transferase, superoxide dismutase and catalase in the liver and colon cells. Administration of probiotic dahi significantly reduced the level of TBARS as compare to DMH control rats (P< 0.01).


203-208 Dietary Modulation And Restoration Of Immune Response By A Prebiotic, Fructooligosacharides: An Experimental Study
UMA RANI AND ARUNA BHATIA

ABSTRACT: The increasing side effects and the cost of allopathic medicines make the consumer incline towards alternative therapeutic agents. As dietary supplements are the most consumer acceptable therapeutic agents the present study was carried out to see the health effects of orally delivered prebiotic (fructooligosacharides) in swiss–albino mice with major focus on its effect on immune response. Nitroblue Tetrazolium (NBT) Test, Inducible Nitric Oxide Synthase Test (iNOS), Phagocytosis and Delayed Type Hypersensitivity (DTH) tests were employed to assess the cell–mediated immune response of the animals and ELISA was carried out to check the humoral immune response of the body. Results revealed that fructooligosacharides potentiated both the cell–mediated as well as the humoral immune response. Fructooligosacharides not only ameliorated the immune response but it could restore the suppressed immune response of drug–immunosuppressed mice. It is concluded that fructooligosacharides can be applied as an immunotherapeutic agents.


209-214 Effect Of Prebiotic Lactulose On Cholesteremia, Glycemia And Antibody Titres: An Experimental Study
ROOPSEE GULATI AND ARUNA BHATIA
ABSTRACT: The high concentration of cholesterol in the diet leads to raised cholesterol level in blood serum and that, in turn, exposes the consumer to the risk of atherosclerosis and coronary heart disease. Similarly, the higher blood sugar level leads to the danger of diabetes. The increasing side effects and the cost of allopathic medicines make the consumer incline towards alternative therapeutic agents. Dietary supplements are the most consumer acceptable alternative therapeutic agents. The present study was carried out to see the effect of lactulose, a prebiotic, on cholesteremia and hyperglycemia. The effect of combination of probiotic and prebiotic on blood sugar level was also determined. The results revealed significant hypocholesteremic and hypoglycemic effect of lactulose.


215-224 Enterococcus Faecalis Cect7121 Induces Systemic Immunomodulatory Effects And Protects From Salmonella Infection
MARISA CASTROA, MÓNICA SPAROB, MATÍAS MOLINAA, JOSÉ ANDINOA, MARCELA MANGHIA

ABSTRACT: In this work, the innocuousness of the bacterial strain of Enterococcus faecalis CECT7121 is demonstrated upon intraperitoneal administration to BALB/c mice. When administrated intragastrically during 3 days, this strain implants and persists in the intestinal epithelium for 18 days without affecting the preexisting flora of enterobacteriae. Besides, E. faecalis CECT7121 protected a 50% of the mice challenged intragastrically with Salmonella serotype Enteritidis. The effect of the administration of E. faecalis CECT7121 on the innate immune response was also evaluated. The in vitro stimulus of heat-killed E. faecalis CECT7121 induced the production of IL-12, TNF_ and IL-6 (inflammatory cytokines) by peritoneal macrophages in a concentration-dependent manner. The production of IL-10 was also stimulated but only when the highest concentration was employed. However, E. faecalis CECT7121 did not stimulate the proliferative level of splenocytes in culture thus showing an anti-inflammatory effect. The intragastric administration of E. faecalis CECT7121 modified the cytokine pattern expressed by peritoneal macrophages, inducing the synthesis of similar levels of TNF_ and IL-12, lower levels of IL-6, whereas IL-10 was not detected. When these cells were stimulated with Salmonella serotype Enteritidis, higher levels of TNFalpha, IL-6, IL-10 and IL-12 were detected. These results indicate that E. faecalis CECT7121 modulates the innate systemic immune response by inducing the synthesis of homeostatic cytokines (IL-12 and IL-10).


225-232 In Vitro Evaluation Of Antimicrobial Activity Of Putative Probiotic Lactobacilli Against Oral Pathogens
ABSTRACT: Effect of probiotic species on oral health is gradually being understood. However, more studies are needed on the characteristics of potential strains before clinical recommendations. The aim of the present in vitro study was to assess the antimicrobial activity of different Lactobacillus strains against oral pathogens, thus evaluating their prospective use as oral probiotics. Agar overlay and streak line methods were employed to study 30 lactobacilli strains for their inhibitory activity against eight oral Streptococcus species and three periodontal pathogens: Aggregatibacter actinomycetemcomitans, Porphyromonas gingivalis and Fusobacterium nucleatum. The results showed a marked strain- and species-dependent inhibitory activity ranging from non-existent to strong inhibition. A. actinomycetemcomitans was the most susceptible of the oral species. However, no single Lactobacillus strain was capable of inhibiting all the oral microorganisms tested. L. bulgaricus strains were more active against streptococcal species and A. actinomycetemcomitans, whereas L. rhamnosus strains showed distinct inhibitory activity against P. gingivalis and F. nucleatum. Conclusion: The present study demonstrated that some Lactobacillus strains might indeed inhibit oral pathogens but not generally. Those particular strains are nevertheless good probiotic candidates for further investigations in oral biology.

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233-238 Probiotic Strain Lactobacillus Fermentum Ccm 7421, Canine Isolate Applied To Dogs Suffering From Gastrointestinal Disorders

VIOLA STROMPFOVÁ, MIROSLAVA MARCINÁKOVÁ, MONIKA SIMONOVÁ, ANDREA LAUKOVÁ, AND MÁRIA FIALKOVICEOVÁ

ABSTRACT: Increasing tendency of gastrointestinal diseases occurrence in dogs lead to study of natural and safe ways to treat them. In the present study, preliminary effect of Lactobacillus fermentum CCM 7421 strain (our canine isolate) with probiotic properties to help in the treatment of 14 dogs with clinical symptoms indicating acute or chronic disorders of gastrointestinal tract was investigated. The strain CCM 7421 was applied once a day at a dose of 3 ml/dog (10⁹CFU/ml) for 7 days. The faeces and blood samples were collected before the beginning and after 7 days of application. After application, significant increase in the population of lactic acid bacteria – lactobacilli and enterococci in faeces (p<0.01) was determined and the counts of Escherichia coli in majority of dogs were reduced. Concerning the biochemical parameters, significant decrease of alanine aminotransferase in dogs with acute gastrointestinal diseases (p<0.01) was detected. On the other hand, an increase of total protein in dogs with hypoproteinemia was noted and regulative effect in cholesterol level, as well. Clinically, watery faeces was arranged to normal consistency in relatively short time in most of dogs. L. fermentum CCM 7421
seems to have beneficial effect in acceleration to recover from digestive disorders of dog; of course, further studies are necessary.

ABSTRACT: Objective of this study was to assess whether probiotics affect the intestinal permeability of infants with cow’s milk allergy and eczema. We studied intestinal permeability to mannitol and lactulose in 112 infants. Of them 87 infants had cow’s milk allergy and 25 infants eczema but negative in the cow’s milk challenge test. Infants were studied before and after one month of treatment with lactobacillus GG, a mixture of four probiotics or placebo. Before the intervention, permeability to mannitol and lactulose was similar in infants with cow’s milk allergy and with eczema. Severity of eczema was not associated with increased permeability. Cow’s milk elimination and treatment of eczema did not alter permeability. Lactobacillus GG reduced the permeability to mannitol in infants with cow’s milk allergy compared to that of the placebo group: 6.179 to 1.486 vs. 4.056 to 4.426 respectively, \( p=0.04 \) and was accompanied with an improvement of the eczema. Permeability to lactulose tended to decrease in the lactobacillus GG group, whereas in the placebo and the mixture groups no significant changes occurred. In infants with eczema no significant changes in permeability appeared. Our results suggest that the beneficial clinical effects of probiotics are accompanied by a decrease in sugar permeability.