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53-60 PROBIOTICS TO YOUNG CHILDREN WITH ATOPIC DERMATITIS: A RANDOMIZED PLACEBO-CONTROLLED TRIAL

R Gøbel, N Larsen, C Mølgaard, M Jakobsen and KF Michaelsen

ABSTRACT: *Impairment of the intestinal mucosal barrier is involved in the pathogenesis of atopic dermatitis (AD), and studies suggest that probiotics stabilize the intestinal barrier function and decrease gastrointestinal symptoms in children with AD. The purpose of this study was to evaluate the clinical and immunological changes of AD after consumption of the probiotic strains Lactobacillus acidophilus NCFM and Bifidobacterium animalis subsp. lactis Bi-07. Double-blind, randomized placebo-controlled intervention study. Fifty children (mean age 18 months) with AD received NCFM (10^{10} CFU/day), Bi-07 (10^{10} CFU/day) or placebo for 8 weeks. The immunological activity and clinical effect was evaluated by IgE, ECP, IL-10, IFN- γ , IL-31, faecal calprotectin and SCORAD index. There were no overall beneficial effects of the probiotic strains on the degree of AD measured by SCORAD index. However, a post hoc analysis showed a significant reduction in severity of AD in the Bi-07 group and together with the decreasing levels of IFN- γ and IL-10 possible beneficial effects of this probiotic strain could be of interest. There was no effect on inflammatory markers or faecal calprotectin. The significant correlation between ECP and SCORAD index suggest the use of ECP as a measure of the degree of AD in children.*

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61-68 EFFECTS OF A NOVEL GALACTOOLIGOSACCHARIDE ON THE FAECAL MICROBIOTA OF HEALTHY AND INFLAMMATORY BOWEL DISEASE CATS DURING A RANDOMIZED, DOUBLE-BLIND, CROSS-OVER FEEDING STUDY

Leticia Abecia, Lesley Hoyles, Christina Khoo, Nolan Frantz and Anne L. McCartney

ABSTRACT: *Inflammatory bowel disease (IBD) is a common gastrointestinal disorder of cats with no known aetiological agent. Previous work has suggested that the faecal microbiota of IBD cats is significantly different from that of healthy cats, including significantly lower bifidobacteria, bacteroides and total counts in IBD cats and significantly lower levels of sulfate-reducing bacteria in healthy cats. Prebiotics, including galactooligosaccharides (GOS), have been shown to elicit a bifidogenic effect in humans and other animals. The purpose of the current study was to examine the impact of a novel GOS supplementation on the faecal microbiota of healthy and IBD cats during a randomized, double-blind, cross-over feeding study. Eight oligonucleotide probes targeting specific bacterial populations and DAPI stain (total bacteria) were used to monitor the feline faecal microbiota. Overall, inter-animal variation was high; while a trend of increased bifidobacterial levels was seen with GOS supplementation it was not statistically significant in either healthy or IBD cats. No significant differences were observed in the faecal microbiota of IBD cats and healthy cats fed the same*

diet. Members of the family Coriobacteriaceae (Atopobium cluster) were found to be the most abundant bacteria in the feline microbiota.

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69-74 A DOUBLE-BLIND, PLACEBO-CONTROLLED, CROSSOVER-DESIGNED PROBIOTIC FEEDING STUDY IN CHILDREN DIAGNOSED WITH AUTISTIC SPECTRUM DISORDERS

Helena M. R. T. Parracho, Glenn R. Gibson, Fiona Knott, Douwina Bosscher, Michiel Kleerebezem and Anne L. McCartney

ABSTRACT: *There is growing interest in the role of gastrointestinal (GI) pathology and clinical expression of autism. Recent studies have demonstrated differences in the faecal clostridial populations harboured by autistic and non-autistic children. The potential of Lactobacillus plantarum WCSF1 (a probiotic) to modulate the gut microbiota of autistic subjects was investigated during a double-blind, placebo-controlled, crossover-designed feeding study. The faecal microbiota, gut function and behaviour scores of subjects were examined throughout the 12-week study. Lactobacillus plantarum WCSF1 feeding significantly increased Lab158 counts (lactobacilli and enterococci group) and significantly reduced Erec482 counts (Clostridium cluster XIVa) compared to placebo. Probiotic feeding also resulted in significant differences in the stool consistency compared to placebo and behaviour scores (total score and scores for some subscales) compared to baseline. The major finding of this work was the importance of study protocol in relation to the specific considerations of this subject population, with an extremely high dropout rate seen (predominantly during the baseline period). Furthermore, the relatively high inter-individual variability observed suggests that subsequent studies should use defined subgroups of autistic spectrum disorders, such as regressive or late-onset autism. In summary, the current study has highlighted the potential benefit of L. plantarum WCSF1 probiotic feeding in autistic individuals.*

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75-84 A DOUBLE-BLIND, PLACEBO CONTROLLED HUMAN STUDY INVESTIGATING THE EFFECTS OF COFFEE DERIVED MANNO-OLIGOSACCHARIDES ON THE FAECAL MICROBIOTA OF A HEALTHY ADULT POPULATION

GE Walton, RA Rastall, MC Martini, CE Williams, RL Jeffries and GR Gibson

ABSTRACT: *The aims of this study were to assess the impact of coffee derived manno-oligosaccharides on the faecal microbiota of a healthy UK based population. Methods and Results: A double-blind, placebo-controlled, crossover human intervention study was conducted. Volunteers were assigned, 3g MOS, 5g MOS and placebo coffee preparations, to consume daily over a 3 wks, followed by a 2 wk washout period. Faecal samples were collected, and microbial population characterised using fluorescence in situ hybridization. Short-chain and branched-chain fatty acid profiles were obtained by gas chromatography. All treatments led to significant lactobacilli increases (placebo, $p < 0.001$; 3g, $p = 0.04$; 5g, $p = 0.04$). The 3g treatment led to a significant bifidobacteria increase ($p=0.001$). Significantly less iso-valerate was found in faeces following 3g MOS daily ($p=0.05$). Conclusions: The 3g dose of MOS led to a potentially beneficial shift in the faecal microbiota. MOS was therefore confirmed to be a prebiotic at 3g dose. Significance and Impact of Study: This study provides*

confirmation of a new novel probiotic, that can be considered for incorporation into a wider variety of food products, to provide different selective and nutritional properties.

International Journal of Probiotics & Prebiotics 5(2): 85-90

85-90 A NOVEL FUNCTIONAL PROBIOTIC PRODUCT CONTAINING PHENOLICS AND ANTHOCYANINS

Florinda Fratianni, Raffaele Coppola, Alfonso Sada, Jose Mendiola, Elena Ibañez and Filomena Nazzaro

ABSTRACT: *The possibility of using fruit juice as growth medium for a bacterial strain was evaluated in order to produce a functional probiotic product. Lactobacillus acidophilus was capable of growing in a mixture of grape and berry juice, as demonstrated by the microbial count (5.41×10^8 colony-forming units/g) obtained after 24 h of fermentation. The microbial pellet was recovered by centrifugation, washed and freeze-dried. After freeze drying, the product was analyzed in terms of microbial amount and biochemical quality, and exhibited a high number of microorganisms (1.2×10^6 viable colony forming units/g), an extraordinary level of polyphenols and anthocyanins (total anthocyanins: 15.86 mg/g; malvidin 3-glycoside: 10.8 mg/g; cyanidin-3-glycoside: 4 mg/g; total polyphenols: 312 mmol GAE/g of dried product; ferulic acid: 1 mg/g; gallic acid: 1.21 mg/g; rutin: 6.45 mg/g; quercetin: 1.12 mg/g; epicatechin: 4.07 mg/g) as well as strong antioxidant activity (DPPH inhibition 86.6%). This formulation can be used for nutritional and health supplementation, thus increasing its value added.*

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91-96 THE USE OF PROBIOTIC STRAINS IN THE PRODUCTION OF A DONKEY MILK-BASED FUNCTIONAL BEVERAGE

Filomena Nazzaro, Florinda Fratianni, Pierangelo Orlando, and Raffaele Coppola

ABSTRACT: *The capability of different probiotic strains of Lactobacillus spp. (L. acidophilus, L. bulgaricus, L. paraplantarum, L. plantarum, L. pentosus and L. rhamnosus) to ferment donkey milk was examined in order to investigate the possibility of formulating a probiotic milk beverage. Donkey milk was inoculated with different strains of Lactobacillus for 48 h. Microbial growth and fermentative aptitude was monitored as well as the microbial capability to produce short chain organic acids (SCOAs). All the strains were capable to grow in donkey milk, as demonstrated by the high microbial count (> 9 log colony forming units/ml) and low pH values. Chromatographic analysis evidenced that the fermented milk exhibited SCOAs other than lactic acid, ranging from 1.41 mmol/L of succinic acid (in milk fermented by L. paraplantarum) to 22.96 mmol/L of acetic acid (in product fermented by L. acidophilus). Butyric acid was present in all products. The possibility of using donkey milk as a growth medium for several probiotic strains, thereby giving rise to the production of a probiotic beverage with healthy SCOAs, can lead the way to a vast number of potential uses for this milk.*

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97-102 THE ISOLATION OF LACTOBACILLUS STRAINS FROM HUMAN GUT FOR USE AS POTENTIAL PROBIOTICS

Bin Wang, Zhiming Wang, Ning Li, Yousheng Li, Qirong Li and Jieshou Li

ABSTRACT: *Eleven Lactobacillus strains of human intestine origin were examined in vitro for their probiotic potential characteristics. The characteristics studied include acid and bile tolerance, adhesion and antimicrobial effect on common pathogens. Most of the strains were able to resist pH 2.5 for 4 h, but only a few strains were able to tolerate 0.3 % oxgall concentrations for 24 h. There was wide variation in ability of strains to adhere to enterocyte-like Caco-2 cells. The highest level of adherence was observed with Lactobacillus plantarum L2 (595±125.76/100 Caco-2 cells). The inhibition ability of isolates tested against common pathogens revealed that Lactobacillus plantarum L2 and Lactobacillus plantarum L6 produced maximum zone of inhibition against some indicator microorganisms, and also displayed the broadest inhibitory spectrum by inhibiting four indicator microorganisms. Therefore, Lactobacillus plantarum L2 was found, in vitro, to possess desirable probiotic properties.*

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103-110 IN VITRO PROBIOTIC POTENTIAL OF LACTOBACILLI ISOLATED FROM INDIGENOUS FERMENTED MILK PRODUCTS

Ravinder Nagpal, Ashwani Kumar and Sanu Arora

ABSTRACT: *In present study, Lactobacilli were isolated and characterized from various milk products, where out of 25 isolates, 5 lactobacilli strains were screened for probiotic properties viz. tolerance to low pH, high bile salt concentration, cholesterol assimilation, cell aggregation and heat tolerance etc. All the 5 isolates showed comparable cell-surface hydrophobicity, and inhibitory activity against B. cereus, E. coli, S. aureus, and Salmonella spp. However, the values for L. plantarum M5 were significantly higher than that of other isolates. Besides these attributes, it could also withstand pH 2.5, and 50°C up to 20 min. The results of storage studies showed that storage at -20°C and 5-7°C had no effect on viable count, and it had good viability after 6 weeks of storage. The results suggest that L. plantarum M5 and L. helveticus L3 could be exploited for potential probiotic foods for better nutrition and health.*