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Ashok Kumar Yadav, Ashish Tyagi, Asha Chandola Saklani, Sunita Grover and Virender Kumar Batish

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IN VITRO PREBIOTIC ACTIVITY OF FRUCTANS WITH DIFFERENT FRUCTOSYL LINKAGE FOR SYMBIOTICS ELABORATION

J. Arrizon, A. Hernández-Moedano, E. Toksoy Oner and M. González-Avila

ABSTRACT: *The ever growing interest in functional foods generated a drive towards developing new and effective symbiotic formulations. Considering the leading role of fructans in this market, three fructans with different fructosyl linkages were investigated for their potential use as prebiotics. For this, growth capacity of anaerobic and aerobic probiotics and pathogenic intestinal bacteria in the presence of these fructans were tested. . Enhanced growth of aerobic probiotics was observed with Agave tequilana fructans (ATF), while levan or inulin increased the growth of anaerobic probiotics. ATF and aerobic probiotics were selected for antibiotic activity. The extracellular metabolites were more effective for antibiotic activity than the direct contact probiotic-pathogenic bacteria. The in vitro effects of prebiotics were found to depend on the type of probiotic. The probiotic extracellular metabolites induced by ATF showed the highest antibiotic activity. This in vitro study clearly showed the importance of selecting the appropriate prebiotics and probiotics for the effective formulation of symbiotics with antibiotic activity.*

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KNOWLEDGE OF PROBIOTICS AND FACTORS AFFECTING THEIR CONSUMPTION BY JORDANIAN COLLEGE STUDENTS

Anas A. Al-Nabulsi, Bayan Obiedat, Rasha Ali, Tareq M. Osaili, Heba Bawadi, Aisha Abushelaibi, Reyad R. Shaker and Richard A Holley

ABSTRACT: *The objectives of this study were to assess the knowledge and beliefs regarding probiotics and determine factors associated with their consumption among Jordanian college students. A total of 1000 students (58.8% females and 41.2% males) were interviewed using a cross sectional study. Each student was asked to complete a questionnaire including socio-demographic data and took a probiotic knowledge test. The results obtained showed that 11.7% of students had heard of probiotics, but only 7.0% correctly knew what probiotics were. Probiotic knowledge among students was significantly correlated with gender, marital status and the students major with females being more knowledgeable than males. Students who had a higher knowledge score were significantly more willing to try probiotic products when they were recommended ($p < 0.05$). It is important that the information's about health-enhancing foods translated into simple, understandable and convincing messages that the consumer can realize in order to overcome the lack of knowledge about probiotic among educated consumers such as university students. Therefore, there is a need for health specialists to spend extra effort to educate students about the nature of probiotics and their health benefits which in turn could be used as prevention tool for the occurrence of many diseases.*

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- 87-92** **IN VITRO PROBIOTIC CHARACTERIZATION OF YEASTS OF FOOD AND ENVIRONMENTAL ORIGIN**
K. Lohith and K. A. Anu Appaiah

ABSTRACT: *Six isolates of Saccharomyces and non-Saccharomyces yeasts along with reference strain Saccharomyces boulardii NCDC363 were subjected to in-vitro tests for screening probiotic characters. Results show that S. cerevisiae AAV2 and Issatchenkia orientalis CL1132, have exhibited higher tolerance for pH, bile and heat stress and Pichia kudriavzevii P2 grew well in simulated gastric and pancreatic juice compared to the reference strain, S. boulardii NCDC363. All the strains showed good auto aggregation capacity (83.8 ± 1.44 to 86.03 ± 0.56 percentage) at 24 hours. In adhesion study, cells which were exposed to chloroform had higher percentage of Microbial Adhesion To Hydrocarbon, strains S. cerevisiae AAV2 and Issatchenkia orientalis CL1132 showed around 93% of adhesion. Overall study revealed that selected yeast strains have the capacity to survive in gastrointestinal environment, which could be used as probiotic in future.*

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- 93-100** **EVALUATION OF PREBIOTIC POTENTIAL OF AGAVE FRUCTANS FROM DIFFERENT REGIONS OF COLIMA AND ZACATECAS, MEXICO**
Marisela González-Ávila, Rogelio Prado-Ramírez, José Luis Flores-Montaño, Francisco Javier Pérez-Martínez, Octavio Gaspar Ramírez and Diana Alonso-Segura

ABSTRACT: *Prebiotic effect of randomly selected fructan samples from Agave tequilana Weber var. azul plants from the states of Colima and Zacatecas, Mexico, were evaluated in vitro and compared with commercial chicory fructans in order to explore new alternatives for the use of this agave plants from Mexico not useful for the elaboration of the alcoholic beverage Tequila. A logistic model was used to obtain an estimated specific growth rate (μ_{max}) from turbidimetric data of Bacillus subtilis and Lactobacillus delbrueckii subsp. bulgaricus, all data was statistically analyzed by one-way ANOVA. Raw agave fructans from the state of Zacatecas exhibit growth rates for L. delbrueckii higher than chicory fructans. Hence these fructans were purified by ion exchange permeation and filtered by tangential flow with membranes of 3 and 1 kDa, obtaining three samples: A, B and C with a degree of polymerization (DP) >10 , <10 without glucose nor fructose, <10 and >10 with glucose and fructose. These purified samples were also evaluated in vitro, with B. subtilis and L. delbrueckii subsp. bulgaricus. Results showed similar prebiotic effect of sample C, 0.138 ± 0.01 h⁻¹, 0.475 ± 0.06 h⁻¹ for B. subtilis and L. delbrueckii respectively, as with commercial chicory sample (Synergy10) 0.107 ± 0.01 h⁻¹, 0.404 ± 0.06 h⁻¹ for the same strains.*

101-108 **MOLECULAR CLONING AND SEQUENCE CHARACTERIZATION OF COLLAGEN BINDING PROTEIN FROM LACTOBACILLUS PLANTARUM STRAIN OF HUMAN ORIGIN**
Ashok Kumar Yadav, Ashish Tyagi, Asha Chandola Saklani, Sunita Grover and Virender Kumar Batish

ABSTRACT: *This study provided the genetic information of collagen binding protein (cbp) of a Lactobacillus plantarum strain of Indian origin Lp72 and Lp91. L. plantarum strains were screened by PCR for the determination the cbp locus in their genome using specific primers. Only L. plantarum strains produced the expected size of amplicon (2.2 kb), which confirmed the specificity of the primers. The cbp amplicon of Lp72 and Lp91 were cloned into pGEM T-Easy vector and nucleotide sequences were determined. Sequence analysis of cbp genes revealed a high level 99% of sequence similarity with the species of L. plantarum. The ORF of 2133 bp encoded a predicted protein of 710 amino acids with molecular mass of 72 kDa. Genetic data presented in this study provide a sound foundation for better understanding the genetic diversity of cbp in Lactobacillus genus and may provide a new genetic marker for phylogenetic study.*