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Jespersen, Lene

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IMPACT OF FOOD BORNE AND PROBIOTIC YEASTS ON HUMAN HEALTH

Jespersen L.
University of Copenhagen, Faculty of Life Sciences, Department of Food Science, Food Microbiology Rolighedsvej 30, DK-1958 Frederiksberg C, Denmark. E-mail:lj@life.ku.dk, Phone: +45 35333230

Key Words: yeast, probiotica, human health

Yeasts are part of the natural microflora of many fermented food and beverages. Besides being able to improve the quality and safety of these products, some yeast species might have a positive impact on human health and well-being. Yeasts are also used commercially as probiotics in the pharmaceutical industry as e.g. "Saccharomyces boulardii". Recent studies have meanwhile shown that "S. boulardii" should not be recognised as a separate species but as a sub-species within Saccharomyces cerevisiae. The close phylogenetic relationship between "S. boulardii" and yeasts used as starter cultures or naturally occurring in fermented food and beverages, raise the question whether these yeast strains also have probiotic traits.
In general, the probiotic properties of yeasts differ from those seen for prokaryotic microorganisms as e.g. lactobacilli. The best known probiotic properties of yeasts appear to be prevention and treatment of diarrhoea, especially in connection with Clostridium difficile, Esherichia coli EHEC (O157:H7), Vibrio cholerae, Salmonella typhimurium and Shigella flexneri infections, but probiotic yeasts are also used in the treatment of intestinal amoebiasis (Entamoeba histolytica). Additionally, yeasts have been shown to be able to prevent the recurrence of Chron's disease. The probiotic effects are mediated by different traits including degradation of bacterial toxins, co-aggregation with pathogenic bacteria, lowering of bacterial epithelial translocation and balancing of the immunological response. The presentation will give an overview over recent developments within probiotic yeasts and provide experimental results on taxonomic positions, yeast adhesion to mammalian epithelial intestinal cell lines, yeast effects on Trans-Epithelial Resistance (TER) of intestinal cells and cytokine expression, as well as the ability of yeast surfaces to bind aflatoxins thereby decreasing the human exposure to aflatoxins present in food and beverages.

ISOLATION, IDENTIFICATION AND FUNCTIONAL CHARACTERISTICS OF LACTIC ACID BACTERIA FROM TRADITIONAL MONGOLIAN DAIRY PRODUCTS

***Jung** M.J.[1], Lee S.Y.[2], Ji Y.S.[3], Lee H.J.[4], Yoon H.S.[5], Ko J.Y.[6], Holzapfel W.[7], Shin H.K.[8]*
[1]School of Life and Food science, Handong Global University, Gyeongbuk 791-708, South Korea
[2,3,4,5,7,8]Handong Global University, Gyeongbuk 791-708, South Korea
[6]Mongolia International University, Ulan Batar Mongolia

Key Words: Mongolian dairy product, identification, lactic acid bacteria, probiotic

The objective of this study was to isolate and study the functional properties of lactic acid bacteria (LAB) from Mongolian fermented milk products, and also to verify the safety of these strains. In addition, some LAB strains were evaluated for their technical properties as potential starters for fermented milk products. For the study, Airag, Tarag, Byaslag and Aaruul were used. Lactic Acid Bacteria (LAB) were shown to dominate the microbial population of Mongolian fermented milk. Fifty-eight strains were isolated using MRS selective media which were all Gram-positive and catalase negative. In addition, 9 yeast isolates were detected, but no Gram-negative bacteria. The LAB strains were initially identified to the genus level on the basis of phenotypic characteristics. From of the 41 heterofermentative strains, 19 strains were rods, and 22 ovoid cocci. The homofermentative strains comprised 2 rods and 15 strains ovoid cocci. Lactobacillus plantarum was not detected. Fifty four strains showed bile salt hydrolase (BSH) activity, 21 strains produced hydrogen peroxide, and 18 strains produced dextran. Twenty-one strains exhibited potential for the use as starter cultures for sour milk, however, only 8 could solidify the milk. For safety evaluation, we determined antibiotic resistance of 21 LAB strains which showed potential as probiotics; all strains tested were susceptible to ampicillin, penicillin G, tetracycline, chloramphenicol, erythromycin but not to streptomycin and ciprofloxacin according to the EU Commission (EUC) breakpoint values. Other features will be reported. Though twenty-one LAB strains had interesting functional properties, with strains A46, A60, and C11-1 showing the highest potential as probiotics on the basis of expected cholesterol-lowering effect, antibiotics susceptibility and sensory evaluation.