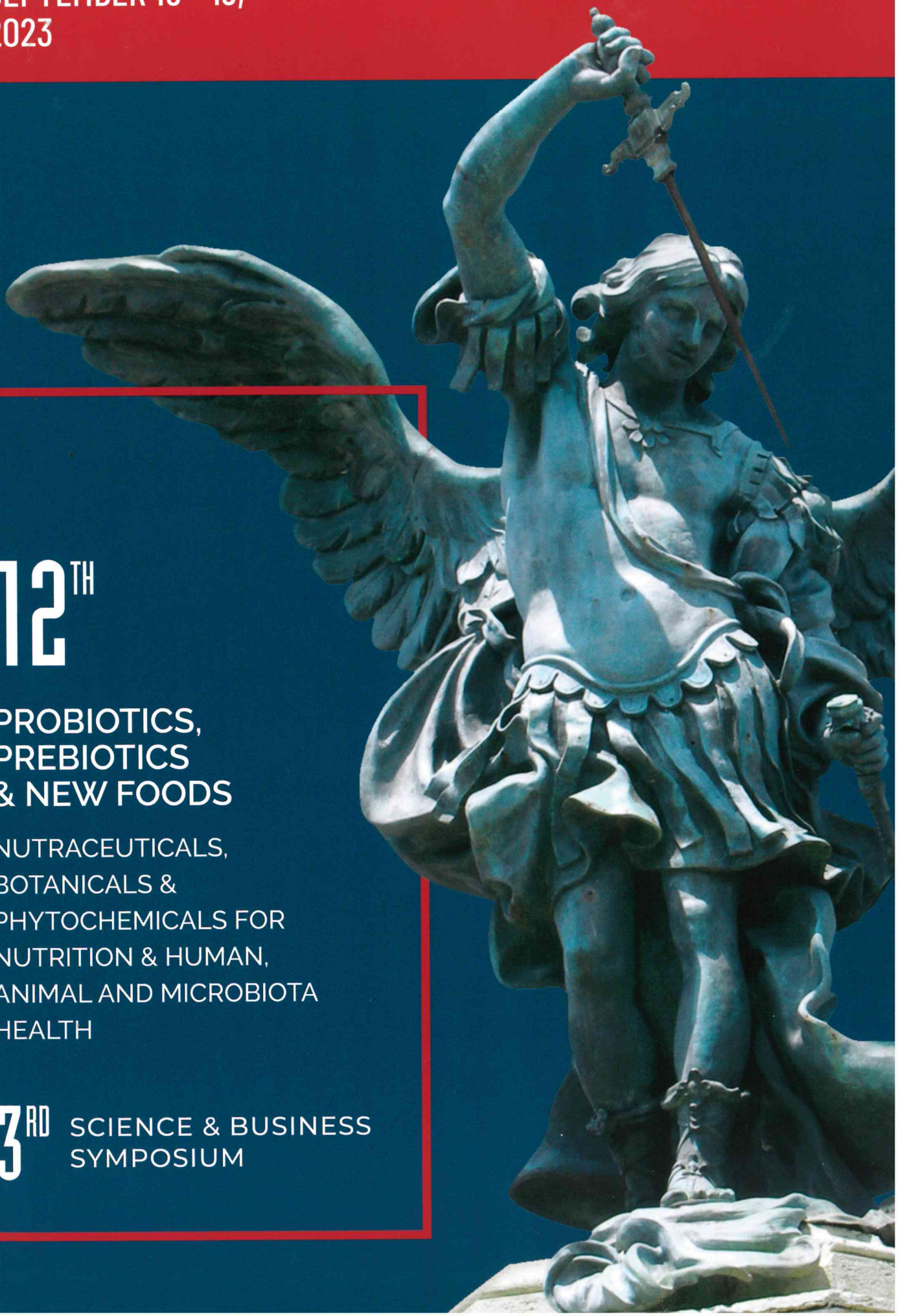
ROME,
SEPTEMBER 16 - 19,
2023



12TH

PROBIOTICS, PREBIOTICS & NEW FOODS

NUTRACEUTICALS, BOTANICALS & PHYTOCHEMICALS FOR NUTRITION & HUMAN, ANIMAL AND MICROBIOTA HEALTH

3RD SCIENCE & BUSINESS SYMPOSIUM

147 - SELECTION OF POTENTIALLY PROBIOTIC LACTIC ACID BACTERIA FROM AN ITALIAN TRADITIONAL RAW MILK CHEESE

Valentina Cipriani [1] - Barbara Guantario [2] - Paola Zinno [3] - Marianna Roselli [2] - ***Chiara Devirgiliis*** [2]

University Roma Tre, Department of Science, Rome, Italy [1] - CREA-Consiglio per la Ricerca in Agricoltura e l'Analisi dell'Economia Agraria, Research Centre for Food and Nutrition, Roma, Italy [2] - CNR- National Research Council, ISPAAM- Institute for the Animal Production System In the Mediterranean Environment, Portici, Italy [3]

Objective:

The growing interest in fermented foods is mainly due to their contribution to a healthy gut microbiota, mediated by foodborne microorganisms with potential benefits. The aim of this study was the characterization of fermentative microbiota of pecorino di Picinisco, an Italian traditional PDO cheese obtained from ovine raw milk, and the evaluation of possible probiotic activities of selected strains.

Methods:

For lactic acid bacteria isolation, two selective media (MRS and LM17) and two growth temperatures (30 and 37 °C) were used. Strain selection and characterization at species level were performed by comparing Rep-PCR profiles and subsequent 16S rRNA sequencing. Adhesion to intestinal cells and antibiotic (ampicillin, erythromycin, tetracycline) susceptibility were evaluated.

Results:

From a total of fourty isolates, eleven strains were identified and three of them, representative of the different species found (Lactococcus lactis, Lactiplantibacillus plantarum and Latilactobacillus curvatus) were selected to test probiotic activities, by comparing them to the reference strain Lacticaseibacillus rhamnosus GG (LGG). Since adhesion to gut mucosa is one of the main selection criteria for probiotics, Caco-2 cells were used as an in vitro model of human intestinal epithelium to evaluate the adhesion capacity of the three strains, which resulted able to adhere to cells, at levels comparable to those of LGG. Concerning safety, all the strains were susceptible to ampicillin, erythromycin and tetracycline, supporting their possible food and pharma applications.

Conclusions:

These promising results lay the ground for further investigations, aimed at confirming the probiotic potential of the three strains examined in this study.

152 - GUAR GUM AS A MICROBIALLY DEGRADABLE COMPONENT FOR AN ORAL COLON DELIVERY SYSTEM BASED ON A COMBINATION STRATEGY: FORMULATION AND IN VITRO EVALUATION

Saliha Moutaharrik [1] - ***Gabriele Meroni*** [2] - Alessio Soggiu [2] - Anastasia Foppoli [1] - Matteo Cerea [1] - Luca Palugan [1] - Francesca Caloni [3] - Piera Anna Martino [2] - Andrea Gazzaniga [1] - Alessandra Maroni [1]

University of Milan, Department of Pharmaceutical Sciences, Sezione di Tecnologia e Legislazione Farmaceutiche "M.E. Sangalli", Milan, Italy [1] - University of Milan, Department of Biomedical, Surgical and Dental Sciences, Milan, Italy [2] - University of Milan, Department of Environmental Science and Policy, Milan, Italy [3]

Objective:

Oral colon delivery is of utmost interest for probiotics. Many formulation approaches have been investigated, including exploitation of enteric soluble, swellable hydrophilic and microbially degradable polymers. However, colon targeting effectiveness is still an open issue. The present work investigated a novel double-coated delivery system for reliable colonic release based on a hybrid strategy leveraging intestinal pH, microbiota and transit time.

Methods:

This system comprised an immediate-release tablet core, an inner hydroxypropyl methylcellulose (HPMC) layer and an outer coating based on Eudragit® S and guar gum. Both layers were applied by spray-coating. The system was tested in 0.1 N HCl followed by phosphate buffer pH 7.4 and in simulated colonic fluid (SCF) containing fecal bacteria from an inflammatory bowel disease (IBD) patient.

Results:

Guar gum did not alter the barrier performance of the enteric film. The HPMC layer provided consistent lag phases, which were synergistically prolonged by the overlying Eudragit® S/guar gum coating. In SCF, prepared according to a purposely applied procedure, the system showed faster release than in the presence of beta-mannanase and in control culture medium.

Conclusions:

The proposed double-coated colon delivery system based on pH-, microbiota- and transit time appeared feasible, reliable and potentially effective in preventing early release in the small bowel and release failure.