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Probiotic survival and prebiotic delivery using an *in vitro* model of human digestion

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Abstract

A dynamic gastric model, developed at the Institute of Food Research, is a computer-controlled gastric model which incorporates the chemical, biochemical, physical environment and processes of the human stomach. The present study reports on the use of the DGM to investigate probiotic survival in a number of food matrices and to study the delivery of prebiotics in the large bowel. Commercial *Lactobacillus* strains and *Lactobacillus rhamnosus* strains isolated from pecorino cheese were tested for their ability to survive in the upper gastrointestinal tract (GIT) using a range of food matrices, which included water, milk and cheese. The results obtained demonstrated a correlation between percentage of survival and pH decrease in the human stomach.

The prebiotic effect of oligosaccharides extracted from bergamot peel (BOS) has been evaluated in a colonic model simulating the human intestinal microbiota. The prebiotic index obtained with BOS well compared with values found when using fructooligosaccharides after 8 h and 10 h fermentation. A full model of GIT has been used to investigate the prebiotic potential of almond seeds and almond skins. The results obtained demonstrated that almond seeds and almond skins could be used as functional food ingredients.

Biography

Dr. Mandalari began her academic career at the University of Messina with a first class BSc degree in Biological Sciences. For her PhD in Pharmacognosy, she undertook a collaborative project in enzyme production and phenolic compounds extraction between the Pharmaco-Biological Department of the University of Messina, Italy and the Food Material Science at the Institute of Food Research UK.

Her main research area involves the investigation of human digestion in relation to gut health. She has a particular interest in *in vivo* studies and the bioaccessibility of nutrients and phytochemicals from various food matrices, which has important implications in the areas of disease prevention and management.