



Presentation title: Antiproliferative properties of *Lactococcus lactis* subsp *lactis* strains isolated from natural whey starter culture on human glioblastoma cell line.

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Presentation type: (Oral presentation)

Abstract (250-300 words):

Over the last decade, probiotics have gained much attention within the medical, pharmaceutical, and food fields, given the health benefit provided from the consumption of these microorganisms. Probiotics include species derived from lactic acid bacteria (LAB), belonging to genus *Lactobacillus*, *Lactococcus*, *Streptococcus*. Postbiotics are function fermentation compound- such as organic acids, short-chain fatty acids, enzymes, peptides, teichoic acids, peptidoglycans, exopolysaccharides, vitamins, plasmalogens, neurotransmitters- produced by probiotic bacteria during fermentation, that exert different health effects. Foods with bacterial probiotics and postbiotics are premised on being healthier than those not incorporated with them. Probiotics, as health-promoting microorganisms, show different therapeutic properties such as anti-pathogenic and cholesterol-lowering activities. Recently, anti-carcinogenic activity is one of the most interesting properties that

has been linked to probiotics. Different studies have shown that certain commensal bacteria play protective roles against cancer. Here we studied the antiproliferative properties of different postbiotics produced by different *Lactococcus lactis* subsp *lactis* strains isolated from natural whey starter culture on human glioblastoma cell lines. MTT and Trypan Blue exclusion assay revealed a significant reduction in vitality of cells treated with postbiotics produced by probiotic strains under study. Moreover, wound healing rate closure of human glioblastoma cell lines and migration is markedly inhibited by postbiotics. Further, flow cytometry analysis revealed a cell cycle block in treated cells. Gene expression analysis of genes involved in cell cycle and/or apoptosis are currently under investigation. This preliminary study highlights for the first time the potential anticancer properties of probiotic *L. lactis* strains on human glioblastoma cell lines.

Biography (150-200 words):

My name is Ida De Chiara, my research project is focused on the isolation and characterization of probiotic bacteria from natural whey starter cultures, with a particular interest on the gut-brain axis. I graduated cum laude in Molecular Biotechnology and then I pursued my study by applying to a PhD program in Biomolecular Sciences. During the first and second year of my PhD I isolated and characterized 69 LAB strains from natural whey starter cultures. I then focused my attention on the ones that showed the highest genotypic diversity and screened them for their safety parameters and probiotic prerequisites, in order to consider these strains safe. During the last year I studied the antiproliferative properties of these strains.