

Title: 'Investigating the effect of cell-free supernatant of probiotic strains on the viability of pancreatic cancer cell lines'

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Background

Pancreatic cancer (PC) is a prevalent cancer accounting for over 450,000 deaths globally in 2020, and is associated with limited treatment options and high mortality rates. Mounting evidence implicates the human microbiome in tumorigenesis and cancer progression with key players including *Helicobacter pylori* in gastric cancer and *Fusobacterium nucleatum* in colorectal cancer and PC. Current research, however, also suggests a potential role for certain microbial residents in oncological treatment and biotherapeutic development. Recent studies have shown a link between cell-free supernatants (CFS) from probiotic strains and cancer cell death, suggesting their potential in targeting the tumour microenvironment. Probiotic genera including *Lactobacillus* and *Bifidobacterium* have been highlighted in this regard.

Aims

Few studies have evaluated the effect of probiotic CFS on PC cell lines. The initial aim of this research is to investigate the potential cytotoxicity of various *Lactobacillus* strains on primary and metastatic PC cell lines.

Future Research plans

Preliminary work has indicated a significant reduction in cancer cell viability when Panc-1 cells were exposed to CFS from selected *Lactobacillus* strains analysed using MTS assays. Ongoing

studies will examine the impact of liquid and freeze-dried CFS produced by *Lactobacillus* and *Bifidobacterial* strains on PC *in vitro*.

Proposed Significance to the Field of Research

Given PC's limited treatment options and low survival rates, the identification and development of a microbial-based therapeutic candidate would be beneficial in developing novel treatment options for this cancer.