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RESEARCH & COLLABORATION PROFILE

KEY WORDS : *Bacteroides fragilis-derived arginyl-tRNA synthetase*, Anti-Cancer, microbial metabolites

Research Snapshot.

Microbial proteins can modulate host physiology, but their direct anti-tumor effects remain poorly understood. Here, we investigated arginyl-tRNA synthetase derived from *Bacteroides fragilis* (*Bf*) and found that it dose-dependently suppressed proliferation and colony formation in HCT116 and MC38 cancer cells without inducing cytotoxicity. *Bf* also increased the G1-phase population while decreasing S-phase cells, indicating G1 cell-cycle arrest. These findings suggest that *Bf* directly inhibits cancer cell growth and may represent a novel microbiome-derived therapeutic candidate.

RESEARCH EXPERTISE

- **Microbiome-Derived Proteins and Host–Microbe Interactions**
- **Cancer Cell Biology and Tumor Growth Regulation**
- **Cell-Cycle Regulation and G1 Arrest**
- **Microbial Protein-Based Anticancer Therapeutics**

RECENT RESEARCH HIGHLIGHTS

- **Identified the anti-proliferative activity of arginyl-tRNA synthetase derived from *Bacteroides fragilis (Bf)* in colorectal cancer cells.**
- **Demonstrated that *Bacteroides fragilis*-derived protein suppresses cancer cell growth by inducing G1 cell-cycle arrest without cytotoxicity.**
- **Highlighted *Bacteroides fragilis*-derived microbial proteins as promising candidates for novel anticancer therapeutics.**

POTENTIAL COLLABORATION RESEARCH

Best-fit collaborator areas:

- **1. Gut Microbiome and Microbial Protein Research**
- **2. Cancer Biology and Tumor Microenvironment**
- **3. Cell-Cycle Regulation and Molecular Signaling**
- **4. Microbiome-Derived Therapeutics and Drug Development**

SELECTED RECENT PUBLICATIONS

- Jo EH, Kim MY, Lee HJ, Park HS.(2023) Ubiquitin E3 ligases in cancer: somatic mutation and amplification. BMB Rep. 2023 May;56(5):265-274.
- Kim CL, Lim SB, Choi SH, Kim DH, Sim YE, Jo EH, Kim K, Lee K, Park HS, Lim SB, Kang LJ, Jeong HS, Lee Y, Hansen CG, Mo JS.(2024) The LKB1-TSSK1B axis controls YAP phosphorylation to regulate the Hippo-YAP pathway.Cell Death Dis. 2024 Jan 20;15(1):76.
- Noh K, Choi H, Jo EH, Yoo W, Park KC.(2024)Role of SYT11 in human pan-cancer using comprehensive approaches.Eur J Med Res. 2024 Jun 1 ; 29 (1):338.

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REPRESENTATIVE RESEARCH FIGURES / SCHEMES



