Episode 98 – Interview with Dr. A. Barbour: Commensal oral bacteria with probiotic and antibiotic properties December 8, 2023

Dr. Abdelahhad Barbour, PhD
Dr. Abdelahhad Barbour is a distinguished molecular microbiologist and oral health expert, renowned for his expertise in probiotics, bacteriocins, and antimicrobial peptides. Inspired by Sir Alexander Fleming's discovery of penicillin, Dr. Barbour pursued postgraduate studies at the University of Malaya, with a focus on exploring new antimicrobial molecules secreted by beneficial microbes. His research involved isolating oral bacteria from kindergarten children in Southeast Asia and screening them for the production of salivaricins, a type of antimicrobial peptides that have the potential to protect healthy children against infectious pathogens.

During his PhD work, Dr. Barbour delved into the mechanism of action of salivaricins against specific pathogens and played a crucial role in the development of new probiotics capable of producing salivaricins. Continuing his academic journey, Dr. Barbour embarked on a postdoctoral position at the University of Toronto, where he collaborated with scientist Dr. Glogauer. Together, they achieved a groundbreaking milestone: the discovery of salivaricin 10, the world's first phosphorylated lantibiotic.

Research
‘Discovery of phosphorylated lantibiotics with proimmune activity that regulate the oral microbiome’

Overview
Dr. Barbour et al. (2023) have discovered a new biotherapeutic molecule, patented as salivaricin 10 (Sali10), produced by a strain of oral probiotic[1] bacteria called *Streptococcus salivarius*, that kills infectious pathogens while promoting a healthy microbiome. This discovery provides opportunity for an alternative to conventional antibiotic treatments and is a novel solution to prevent infectious diseases. [1]

Research team

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[1] Refer to Episode 63 for additional information on probiotics and the oral microbiome.

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Reference

[1] A. Barbour, L. Smith, M. Oveisi and etal., "Discovery of phosphorylated lantibiotics with proimmune activity that regulate the oral microbiome," *Proceedings of National Academy of Science,* vol. 120, no. 22, pp. 1-12, 22 May 2023.

Additional Resources

Discovery of phosphorylated lantibiotics with proimmune activity that regulate the oral microbiome, Barbour, A; Smith, L; Oveisi, M; et al. *Proceedings of National Academy of Science*, Volume 120, Issue 22, May 22, 2023, p 1-12 https://www.pnas.org/doi/10.1073/pnas.2219392120

Researchers discover molecule in the mouth that could help eliminate pathogens https://www.utoronto.ca/news/researchers-discover-molecule-mouth-could-help-eliminate-pathogens

U of T start-up's breakthrough molecule: Eliminating pathogens without harming oral microbiota https://www.dentistry.utoronto.ca/news/u-t-start-ups-breakthrough-molecule-eliminating-pathogens-without-harming-oral-microbiota

Evolution of lantibiotic salivaricins: New weapons to fight infectious diseases, Barbour, A; Wescombe, P; Smith, L. *Trends in Microbiology*, Volume 28, Issue 7, July 2020, p 578-593 https://www.cell.com/trends/microbiology/fulltext/S0966-842X(20)30058-5