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Probiotics: Growth patterns of lactobacilli and their effects on antibiotics, pathogenic bacteria, and other lactobacilli strains

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Statement of the Problem: Incidences of bacterial infections are increasing and alternative treatments are needed. The microbiome has become a focus of interest in medicine and research studies are needed to determine the health impact of probiotics. Exploring the interaction of antibiotics and probiotics is an important area of research as antibiotics cause widespread devastation throughout the microbiome. Developing a probiotic that can combat the effect of an antibiotic on the microbiome is essential to eliminate the decimation caused by antibiotic therapy. Studying the growth of individual probiotic strains and combinations is an important foundation in probiotic research and necessary in developing effective probiotic supplements.

Methodology: Standard bacterial growth curves were established for commercial probiotics and compared to pathogenic bacteria. Probiotics and pathogenic bacteria were combined to establish growth curves for these amalgamations. Growth curves were established for individual strains of Lactobacilli and some initial combinations of these strains. Ampicillin and penicillin susceptibility discs were used to treat plates of varying concentrations of probiotic bacteria to determine the effect by measuring the zones of inhibition.

Findings: Ampicillin and penicillin are less effective against a combination of Lactobacillus and Bifidobacterium than on the individual genera. A probiotic containing *Lactobacillus fermentum* exhibited a growth rate similar to the pathogenic bacteria.

Conclusion & Significance: Research of probiotic bacteria is needed to develop effective probiotics and to develop a deeper understanding of the role of microbiome plays in overall health. Emphasis should be placed on the study of *Lactobacillus fermentum* based on the results of this research.

Biography

Heidi Rowles has studied aspects of probiotic bacteria and is now focusing on the growth rates and interactions of Lactobacilli. She has investigated the effects of probiotics on ampicillin and penicillin, compared the growth rates of commercial probiotics to that of pathogenic bacteria, the effect of probiotic bacteria on pathogenic bacteria, and the effect of different media on these interactions. Her current research focus is the growth rates of individual strains and combinations of Lactobacilli.

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