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Probiotics: growth patterns of *Lactobacilli* and their effects on antibiotics, pathogenic bacteria, and other *Lactobacilli* strains

Heidi L Rowles
University of Cincinnati Clermont College, USA

Incidences of bacterial infections continue to increase and alternative treatments need to be developed. The microbiome is of major interest in medicine and research. Exploring the interaction of antibiotics and probiotics is an important area of research. Developing a probiotic that can combat the effect of an antibiotic on the microbiome is essential to eliminating the decimation caused by antibiotic therapy. Studying the growth of individual probiotic strains and combinations thereof is an important foundation in probiotic research and necessary in developing effective probiotic supplements. Standard bacterial growth curves were established for several 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 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. 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. The interactions of indigenous gut and probiotic bacteria are very complex and research into these interactions is needed to develop a deeper understanding of the role the microbiome plays in overall health. Research of probiotic bacteria is needed to develop effective probiotics. Emphasis should be placed on the study of *Lactobacillus fermentum* based on the results of this research.

Biography

Heidi L 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*.

rowleshl@mail.uc.edu

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