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Antibacterial Effect of Probiotic Yoghurt Against *Escherichia coli* and *Staphylococcus aureus*

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Structured Abstract

Background: Antibacterial agents have the ability to inhibit bacteria. The emergence of antibiotic resistance is a major global health issue, and this affects *E. coli* and *S. aureus*. These bacteria are linked to gastrointestinal, respiratory, and bloodstream infections. This resistance to antibiotics makes the use of natural antibiotics, such as probiotics, a priority. Probiotic yoghurts contain lactic acid bacteria, which can produce antimicrobial metabolites. This study aims to evaluate the antibacterial activity of probiotic yoghurts against *E. coli* and *S. aureus*. Thus, to compare the inhibitory effectiveness of various probiotic yoghurt brands based on their microbial content.

Methods: This research determine the antibacterial activity of three samples of probiotic yoghurt against *E. coli* and *S. aureus* bacteria using the disc diffusion method. The bacterial cultures were carefully standardized to 0.5 McFarland to ensure consistency across all experiments. The positive and negative controls used in this research were polymyxin B and sterile distilled water, respectively, to validate the results. All tests were meticulously carried out in triplicate to ensure the reliability and reproducibility of the findings.

Results: All the probiotic yoghurt samples exhibited antibacterial properties against both *E. coli* and *S. aureus*, forming distinct inhibition zones. Yoghurt A showed the most pronounced effect for both bacteria compared to the other samples, although the differences were not significant. Generally, the antibacterial effect of the yoghurt was similar for *E. coli* and *S. aureus*, implying that the products of the probiotic bacteria had similar effects on these bacteria.

Conclusion: Probiotic yoghurts showed moderate antibacterial activity against *E. coli* and *S. aureus*, which can be mainly ascribed to organic acids and fermentation products, rather than the diversity of the probiotic strains. The study shows the potential of probiotic yoghurt as a natural antimicrobial agent, which can be used as an alternative approach in the fight against antibiotic resistance.

Keywords: Yoghurt, Lactic acid bacteria (LAB), Probiotic

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