UNIVERSIDADE FEDERAL DE VIÇOSA
CENTRO DE CIÊNCIAS EXATAS E TECNOLÓGICAS
DEPARTAMENTO DE TECNOLOGIA DE ALIMENTOS
Secretaria da Pós-Graduação em Ciência e Tecnologia de Alimentos

Campus Universitário – Viçosa, MG – 36570-900 – Telefone (31)3612-6705/6760 – E-mail: tc a@ufv.br

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TÍTULO DO RESUMO

Pós-graduando: Izabela Vieira Botelho
Orientador: Monique Renon Eller (DTA)
Nível: ( ) MS (x) DS

"Detection of Pathogenic Bacteria through Novel Protein-Based Assays: A Promising Approach for Improved Diagnostics"

This abstract presents a novel approach for the rapid and cost-effective detection of pathogenic bacteria, with a focus on the highly virulent and multidrug-resistant Pseudomonas aeruginosa. This bacterium is notorious for its ability to form biofilms and its prevalence in healthcare-associated infections. Such infections, affecting individuals with compromised immune systems and conditions like cystic fibrosis, often lead to severe complications. Conventional detection methods are expensive, time-consuming, and challenging to implement, particularly in resource-limited and remote settings.To address this gap, the research group in Biotechnological Products and Processes in the Food Industry at UFV (Universidade Federal de Viçosa) has developed innovative microagglutination and colorimetric tests capable of identifying Pseudomonas sp. within 3 to 10 minutes of contact, respectively. These tests exploit the specificity of the tail protein of the UFV-P2 bacteriophage as a sensing molecule for Pseudomonas aeruginosa identification. The current study aims to utilize this technology for the rapid detection of P. aeruginosa in urine samples from infected patients. Additionally, using a similar methodology, predictive models for rapid detection of Escherichia coli and Staphylococcus aureus will be developed and tested.The primary objective of this research is to enable accurate, swift, and easily applicable diagnostics at a low cost, thereby facilitating prompt and precise treatments. This approach is anticipated to alleviate the financial burden on healthcare systems and reduce the duration of medical interventions. Moreover, these models hold the potential for broader applications across various domains, including the food industry and water analysis in treatment facilities. This innovative approach not only addresses an urgent need in medical diagnostics but also lays the foundation for versatile applications with far-reaching implications.

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