

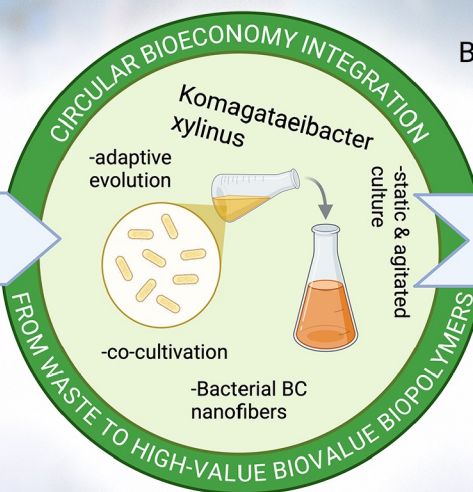
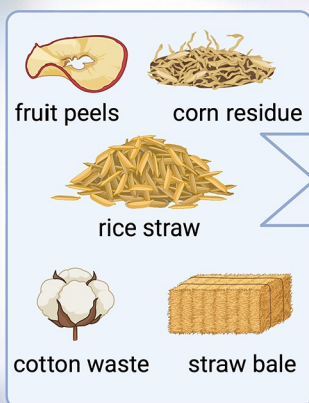


From Agricultural Waste to Bacterial Cellulose for a Circular Bioeconomy

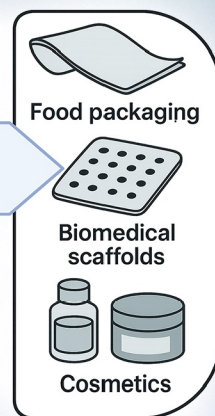
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From Waste to Bacterial Cellulose: A Sustainable Route to Circular Bioeconomy

Agricultural and Agro-Industrial Residues



Bacterial Cellulose





Article

Emergence of Multidrug-Resistant and Biofilm-Producing *Staphylococcus aureus* from Raw Poultry in Algeria: Implications for Public Health

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Abstract

Staphylococcus aureus is a common foodborne pathogen, posing significant concern due to the emergence of its multidrug-resistant (MDR) strains. The aim of this study was to assess the antibiotic resistance profiles in *S. aureus* isolated from raw poultry, the associated resistance genes, and their ability to form biofilms. *S. aureus* was isolated and identified using conventional microbiological methods. Antimicrobial susceptibility profiles were assessed using the disk diffusion method, and biofilm-forming ability was evaluated using the microtiter plate assay. The presence of antimicrobial resistance genes was determined by PCR. A total of 45 isolates were isolated. High resistance rates were observed against penicillin (88.9%), tetracycline (86.7%) and doxycycline (66.7%). Of the isolates, 71.1% were classified as multidrug-resistant (MDR) organisms, and 60% exhibited a multiple antibiotic resistance index greater than 0.2. PCR analysis revealed the presence of the resistance genes *blaZ* (86.7%), *mecA* (27.3%), *tet(M)* (46.2%), *tet(K)* (35.9%), *tet(S)* (59%), *erm(B)* (51.9%), and *erm(C)* (59.3%). A total of 44 isolates were biofilm producers: 46.7% were weak producers, 46.7% were moderate producers, and 4.4% were strong producers. These findings highlight a significant public health concern, emphasizing the need for stringent hygiene practices and continuous monitoring to limit the spread of resistant pathogens through the food chain.

Keywords: *S. aureus*; raw chicken meat; antibiotic resistance; resistance genes; MDR; biofilm



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1. Introduction

Staphylococcus aureus (*S. aureus*) is a commensal and opportunistic bacterium with a broad host range capable of causing a wide range of infections, from minor skin and