

Proceeding Paper

PRESERVATION OF CHICKEN MEAT USING LACTIC ACID BACTERIA ISOLATED FROM CAMEL MILK

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Summary: This study investigates the isolation and purification of lactic acid bacteria (LAB) with antibacterial properties from camel milk, and their application in chicken meat preservation. Through phenotypic identification, 10 LAB strains were isolated, and their antagonistic effects were evaluated in vitro against four pathogenic bacteria: *Staphylococcus aureus*, *Bacillus subtilis*, *Escherichia coli*, and *Pseudomonas spp.*, using spot, well diffusion, and disk diffusion methods. The results revealed that all selected LAB strains exhibited significant inhibitory activity against both Gram-positive and Gram-negative bacteria. Further, the study examined the antibacterial efficacy of postbiotics derived from a selected strain (DS12) in preserving chicken meat. The preservation was assessed through physicochemical, sensory, and microbiological analyses. The findings indicate that LAB postbiotics, in combination with sodium alginate coating, are effective in reducing microbial growth and extending the shelf life of chicken meat. This combination treatment was found to be the most promising approach in achieving enhanced food preservation

Key words: Preservation, lactic acid bacteria, Chicken Meat, Camel Milk

Introduction

Camel milk is a vital nutrient source for people in arid regions, rich in essential vitamins, fatty acids, and minerals. It also contains diverse lactic acid bacteria (LAB), which thrive even in harsh desert conditions, making it a valuable food resource. LAB from camel milk show great potential for biopreservation, as they produce organic acids, bacteriocins, and other bioactive compounds that inhibit spoilage microorganisms. This study focuses on isolating and characterizing LAB from camel milk, exploring the potential of their postbiotics as natural preservatives to extend the shelf life and enhance the safety of chicken meat through bioactive coatings.

Materials and method

Three camel milk samples were collected under strict hygienic conditions from different regions in Ouargla and transported to the lab at 4°C for analysis. Fresh chicken breast fillets were also sourced from a butcher in Sidi-Bel-Abbès and transported under the same conditions. The study utilized lactic acid bacteria (LAB) strains previously isolated from camel milk, along with four indicator strains: *Staphylococcus aureus*, *Escherichia coli*, *Bacillus subtilis*, and *Pseudomonas spp.*.

Lactic acid bacteria (LAB) were isolated and purified from each camel milk sample using serial dilution and plating on selective media. The LAB strains were identified through biochemical and phenotypic techniques. Postbiotics were then extracted and purified from the LAB cultures, and their antimicrobial activity was evaluated using standard microbiological assays. The

purified postbiotics were subsequently incorporated into food-grade polymers, such as sodium alginate, for further application in Chicken meat preservation.

Results

In this study, ten lactic acid bacteria (LAB) isolates were identified and purified based on Gram staining, catalase tests, and biochemical characteristics. All isolates demonstrated inhibitory activity against both Gram-positive and Gram-negative bacteria. When combined with sodium alginate coating, LAB postbiotics significantly reduced microbial growth and extended the shelf life of chicken meat, highlighting their potential for effective food preservation.

Conclusion

This study highlights the potential of LAB isolated from camel milk for food preservation. Further research is needed to optimize and combine preservation methods for prolonged effectiveness.

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