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Natural film-forming solutions xanthan gum based as potential prevention of mastitis-causing microbial agents

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Statement of the Problem: Bovine mastitis is one of the most frequent diseases in dairy cattle. It is caused by several species of microorganisms after the contact with the animal's udder, penetrating the roof canal and causing mammary gland inflammation. Mastitis is considered one of the most important diseases in this sector, since it affects directly the milk production, causing great economic damages. The use of antiseptic solutions is the most common method to prevent the disease; however, these commercial products have highly aggressive substances for the animals and may result in milk residues. The objective of this work was to develop natural film-forming solutions based on xanthan gum incorporated with clove and cinnamon essential oil, and evaluation of the antimicrobial activity against *Staphylococcus aureus* and *Escherichia coli* that are microorganism's mastitis causing.

Methodology & Theoretical Orientation: The film-forming solutions were produced by mechanical emulsion with essential oil concentrations of 0.1; 0.3; 0.5; 1; 2; and 3%.

Findings: The antimicrobial activity was better for the formulations containing cinnamon essential oil at concentrations above 1%, presenting better results than the commercial product used as a reference. The emulsion containing the essential oils exhibited good stability over 30 days of storage.

Conclusion & Significance: The film-forming solutions containing essential oils were effective against the growth of the studied microorganisms and presented very good results as compared to the commercial product used as positive control. In this way, the present product can become a natural alternative to commercial products available, since its formulation is based on natural products considered generally safe.

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