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Main topic : Antimicrobial resistance: A worldwide concern

Identification and antimicrobial resistance profile of microorganisms isolated from raw milk and fresh goat cheese in family systems in Mexico

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Introduction
In Mexico, goat milk production systems have polarized, on the hand there are those whose owners have a greater capacity for economic investment, educational level and acceptance of productive technology, which are called specialized systems and on the other extreme, they focus on family systems which are productive units that are made up of small herds, this type of production units are generally small and rustic with very low milk production levels. The objective of this work was to identify the potentially pathogenic bacterial agents, as well as to determine the susceptibility to antimicrobial from isolates in samples of fresh goat cheese, as well as from the milk that gave them origin.
Methods
Two production units that were representative of the main production areas of fresh goat cheese were sampled: North zone from Mexico, Durango, central zone Queretaro and south zone Campeche. Additionally a production unit that has implemented protocols of good livestock and manufactering practices was sampled. Raw milk samples were taken from the storage tank in a 50 ml sterile containers, from the cheeses two or three samples were taken.The raw milk anf cheese were sown on blood and MacConkey agar, in the case of *Salmonella* were sown in specific chromogenic media for this bacteria. Additionally the samples were sown in selective media such as Farrel medium for the isolation of *Brucella,* listeria broth as a pre-enrichment medium and Listeria agar. Bacteria identification was performed using traditional bacteriology. The susceptibility profiles of the isolates to selected antimicrobial were determined by the Bauer-Kirby method.
Results
It is important to highlight that all *Staphylococcus aureus* and coagulase negative *Staphylococcus* , and *Streptococcus* presented 100% resistance to penicilin. Regarding the samples of Gram negative pathogens, resistances above 50% to Ampicillin, Nitrofurantoins and Gentamicin were obtained in the case of milk samples, as for the cheese samples, most of the isolated strains presented resistance above the 40% to Ampicillin, Carbenicillin, Ciprofloxacin, Chloramphenicol and Gentamicn, of the isolated bacteria, *Proteus vulgaris* , *Proteus mirabilis* , *Pseudomonas aeruginosa* and *Escherichia coli* were the bacteria that presented a broader resistance profile. When comparing the general averages of resistance for bacteria obtained from milk versus those obtained from cheese using the Mann-Whitney U test, no siignificante difference was found.
Conclusions
In this study the presence of bacteria considered pathogenic and causin foodborne diseases in fresh goat as well as in the milk that gave rise to them produce in family systems in Mexico was evidenced. A greater diversity of pathogenes was found, revealing the impact of the lack of good livestock and manufacturing practices in these productive units, manifesting as contamination due to hygienic-sanitary deficiencies during the production chain, which implies a risk to public health combined with to the fact of the growing profile of resistance to antimicrobials presented by this type of microorganisms.