

## SUMMARY OF THESIS

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LUZ, Isabelle da Silva - **Caracterização molecular das toxinas em *Staphylococcus aureus* isolados de leite e queijo de coalho em municípios da região agreste de Pernambuco.** Recife, 2008. (Dissertação de Mestrado - Centro de Pesquisas Aggeu Magalhães, Fundação Oswaldo Cruz).

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### MOLECULAR CHARACTERIZATION OF TOXINS IN *Staphylococcus aureus* ISOLATED FROM MILK AND “COALHO” CHEESE IN CITIES FROM THE AGRESTE REGION OF PERNAMBUCO

Milk and cheese have an important role in human nutrition and when consumed without proper hygienic/sanitary precautions, they can cause disease due to the presence of pathogenic microorganisms, particularly *Staphylococcus aureus*. The involvement of this bacterium in the epidemiology of food-borne diseases is due to its high prevalence and risk of producing thermostable enterotoxins that are responsible for food poisoning. *S. aureus* can produce other toxins of interest to human health such as toxic shock syndrome toxin-1, responsible for toxic shock syndrome in humans and the exfoliative toxins, causative agents of scalded skin syndrome. Some have applied molecular analyses of the coagulase gene to subdivide *S. aureus* based on the polymorphism of this gene. Bacterial resistance to antibiotics is a serious problem for the Public Health Department because resistant bacteria can be transmitted to humans through contaminated foods. The aims of this study were to isolate *S. aureus* obtained from milk and “coalho” cheese from the Agreste region of Pernambuco, characterize the antimicrobial sensitivity profile, research the presence of genes responsible for toxins, investigate the expression of the toxigenic genes in isolates of *S. aureus* and correlate molecular typing by the coagulase gene with the presence of toxigenic

genes. The antimicrobial sensitivity profile demonstrated that the majority of the *S. aureus* isolates was sensitive to vancomycin, sulfa + trimethoprim and enrofloxacin, and some demonstrated a high level of resistance to other antibiotics tested. The analysis of the gene *coa* in 94 *S. aureus* isolates allowed their distribution into two coagulotypes, *coa1* = ~750 bp and *coa2* = ~1000 bp, suggesting the spread of clones restricted to the Agreste region of Pernambuco. Among the 88 *S. aureus* isolates positive by PCR, the following genotypes were found: *seg, seh, sei, seg + seh, seg + sei, seg + sej, seh + sei, seg + seh + sei, seg + sei + sej* and *seg + seh + sei + sej*. These results suggest the existence of a geographic variation in distribution of *S. aureus* carrying toxigenic genes. Of these, 20 isolates were selected for analysis by RT-PCR. The transcripts obtained in 12/20 were *seg, seh, sei, seg + seh, seg + sej* and *seg + sei + sej*, and *coa1* and *coa2*. The *S. aureus* isolates positive by PCR and RT-PCR examined in this study expressed genes responsible for enterotoxins and showed potential to cause a clinical picture of food poisoning.

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