

## CHITOSAN BIOACTIVITY IN INHIBITION OF *Staphylococcus aureus* IN BURGERS

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The burger is a meat product, widely consumed worldwide that conquered popularity because it's sensorial characteristics, low cost and practicality. However, a drawback is that this product can be contaminated easily during preparation, and nutritional properties of meat a contributing factor to the development of pathogenic microorganisms such as *Staphylococcus aureus*, one of the major causes of foodborne diseases. In an attempt to reduce levels of chemical additives used in meat products, research into natural compounds is looking for an alternative employment and more suitable preservative. In this sense chitosan, natural polymer with antimicrobial potential, has been highlighting and becoming more popular as an alternative method of preservation in food, especially in meat products. This study aimed to determine the bioactivity of chitosan (CHI) in inhibiting *S. aureus* in burgers during storage. Chitosan (Sigma) was solubilized in 1% acetic acid (20mg/mL), with pH adjusted for 5.8. The antimicrobial activity of CHI was evaluated against *S. aureus* by microdilution method in BHI broth, and subsequent incubation in Baird Parker agar without substance test, for determine the Minimum Inhibitory Concentration (MIC), and the Minimum Bactericidal Concentration (MBC), respectively. Bacteria were incubated at 37°C/24h. To MIC was used resazurin staining, as a bacterial growth. The concentration of CHI varied 12.0 to 0.05 mg.mL<sup>-1</sup>. The hamburgers were produced in the laboratory; the ingredients were grinded and homogenized until obtaining a smooth batter, in which was added chitosan in the proportion of CIM and CBM. The hamburgers (15g each), were wrapped in plastic film and stored at freezing at - 20 °C. *S. aureus* (5x10<sup>8</sup> Colony Forming Unity/mL), was used to infect the hamburger. In the Hamburgers infected with *S. aureus*, the count of bacteria was performed in the intervals of 0, 1, 5, 10, 15 and 30 days, for determining the interference of CHI on the microbial death curve of *S. aureus* in burger. Chitosan solution demonstrated MIC and MBC, respectively of 2.5mg.mL<sup>-1</sup> and 5.0mg.mL<sup>-1</sup> to *S. aureus*. In hamburgers, the presence of chitosan at 5 mg.mL<sup>-1</sup> reduced microbial growth (50%), and with chitosan 2.5mg.mL<sup>-1</sup> (25%) in the samples compared to the hamburger samples without chitosan. Based on these results, it is concluded that chitosan has antimicrobial property to *S. aureus* in meat product, consisting a natural promising alternative of conservation method.

**Keywords:** Biopolymers; foodborne diseases; meat products; shelf life.