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## Study of the propolis effect incorporation into edible zein films

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**Abstract** - Our group has worked with the study of zein based films. These form a natural barrier that can increase their shelf life of fruits its durability and reduce sources of contamination. There is great concern about the quality and food contamination. A product that can act to the movies is propolis, a natural antibiotic produced by bees from a mixture of various plant resins collected from plants. For this work, we used test Gram stain, KOH, motility and analysis of the effect of propolis by UV-Visible spectrophotometry.

Our research group has worked with the study of films from zein storage base, which are storage proteins of maize, to increase the shelf life of fruits. The films based on these proteins form a natural barrier to moisture and oxygen, which can leads to a decrease rate of respiration the fruit and increase its durability. However, beyond the concern with increased shelf life, there is also the need to reduce the sources of contamination in coated fruits. So, this study analyzed the effect of propolis on bacteria commonly found in supermarkets, in order to evaluate the possibility of incorporation in the zein based films.

Contaminated food usually have Gram-negative bacteria type, one of the most usual bacterial found is the Enterobacteriaceae which are naturally found in the mammalian intestinal tract, but when found in other places can cause serious infections. These bacteria have mobile bacilli form and have been responsible for the majority of nosocomial infections. The most common ones are Escherichia coli, Salmonella, Vibrio cholerae, Proteus and Citrobacter, which can cause infection in several parts of human body like: urinary tract, lung, central nervous system and skin.

Thus we have analyzed the surface of fruits, vegetables and beches where they are stored to see if there were such germs that cause most infections. Were collected at ten different points, which resulted in a variety of bacterias, among them gram-positive and gram-negative. Bacterias were enumerated. Using the Gram, KOH and motility tests it was possible to characterize thirteen different samples Gram-negative mobile.

The interest among all this diversity was not to identify the bacteria, but verify the action of propolis on Gram-negative mobile. In this paper we studied the action of rosemary propolis, produced in Minas Gerais south region, as a natural antibiotic to prevent or counteract bacterial growth on fruits and vegetables.

Five different bacteria samples were exposed to seven different concentrations of propolis solution (0,01 mg/mL, 0,15 mg/mL; 0,25 mg/mL; 0,5 mg/mL, 1 mg/mL, 1,5 mg/m e 2 mg/mL) The five bacteria were incubated individually with the concentrations of propolis solutions above in TSB medium (Tryptic Soy Broth) and shaken at 130 rpm at 32°C for 10 hours and analyzed at intervals of 1 hour with UV-visible spectrophotometry at 640nm wavelength. The bacteria growth curves showed that for the five ones tested here, only the propolis solution concentration of 0.5 mg/mL showed bacteriostatic effect, and this concentration must be tested with the zein film.

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