

Antimicrobial activity of different spices

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Abstract

Pathogenic microorganisms are responsible for many foodborne illnesses. This situation causes constant concern to the food industry and consumers. Moreover, there is much worry about the possible adverse effects of chemical additives used in food preservation. Another problem related to pathogenic microorganisms is the antibiotic resistance. A search for natural antimicrobial agents present in plant extracts tends to be a very interesting solution to all these questions. Thus, the objective of this study was to evaluate the antimicrobial activity of five different spices (garlic, ginger, bay leaves, sage and annatto), individually and combined. Six-mm filter paper disks suitable for antibiograms were impregnated with aqueous extracts of the spices and placed on Petri dishes with the appropriate culture medium and previously seeded with the following micro-organisms: *Bacillus cereus*, *Bacillus subtilis* (ATCC 6633), *Salmonella* Typhimurium (ATCC 14028), *Salmonella* Enteritidis and *Staphylococcus aureus* (ATCC 22923). Subsequently the Petri dishes were incubated at 35°C for 24-48 hours. The cultures were obtained from the Food Microbiology Laboratory collection of the Food Technology and Engineering Department – UNESP São José do Rio Preto. After this period the inhibition zone was measured. Significant antimicrobial activity was characterized when the inhibition zone was equal to or greater than 10 mm. The results show that the aqueous extract of sage had significant antimicrobial activity against *S. Typhimurium* (12 mm); the combined extracts of sage with garlic were effective against *B. cereus* and *S. aureus* (10 mm), and the combined extracts of sage with annatto, sage with bay, and sage with ginger significantly inhibited *S. aureus* (10 mm). In conclusion, sage individual extract and all combinations (garlic, annatto, bay leaf and ginger) inhibited most of the microorganisms tested.

Keywords: Antimicrobial activity, spices, sage