

Title: Synergism between garlic extract and antimicrobial drugs used on *Staphylococcus aureus* diseases

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Abstract:

The control of infections caused by multidrug-resistant pathogens is problematic for public health services worldwide. Currently studies have shown that constituents of garlic (*Allium sativum*) as the ajoeno and dialina disulfide may be as or more effective than allicin. The present study aimed to analyze the influence of (*Allium sativum*) aqueous extract activity in the minimum inhibitory concentration of antibiotics against *Staphylococcus aureus*, in vitro, and its synergistic effect with vancomycin, gentamicin, and tetracycline. The synergy tests were performed by Kirby-Bauer method. The assays were carried out with gentamicin (10 µg/mL), tetracyclin (30 µg/mL) and vancomycin (30 µg/mL) isolated, in association with each antibiotic and in association with extract of garlic. After spread *S. aureus* over the solid medium diffusion Muller Hinton, the paper discs containing garlic, isolated antibiotics, or antibiotic in association were placed on agar using filter paper discs. The results were submitted to the test *t* of Wilcoxon and were significant when values for *p* <0,05. The results showed antimicrobial activity of the extract of garlic against *S. aureus* strains (Derived ATCC-25923). Showed too the synergism between the extract and the antibiotics. The greatest evidence of synergism was observed in the combination of extract with vancomycin. The antimicrobial activity of the garlic is possibly in the inhibition of the protein synthesis. It is important understood the mechanisms of the synergism between medicinal plants and antibiotics so that it is possible the development of new drugs. Regarding the results obtained in this study, the association of antibiotic therapy with garlic extract can represent a promising therapeutic tool for the treatment of bacterial diseases with possibility of reduction in the toxicity degree and bacterial resistance to antibiotics.

Keywords: Garlic. Antibiotic therapy. Synergism between antibiotics and plants.