A Comparative Study of the Antibacterial Activity of Bioactive Compounds From the Bougainvillea glabra and Plectranthus amboinicus Plants

Marrero Baez , Juan P. (School: Superior Rafaelina E. Lebron Flores)

Pathogenic bacteria are evolving to such an extent that by 2050 an estimated 10 million people will die because of antibiotic resistance. This public health problem is compounded by the slow development process of new commercial drugs, as well as the protocols for the study and the approval of drugs for clinical treatment. Hence, the posed research question: Will the bioactive compounds of the Bougainvillea glabra (Trinitaria) and Plectranthus amboinicus plants (Orégano brujo) have an antibacterial effect against the bacteria Escherichia coli, Staphyloccocus aureus and Pseudomonas aeruginosa? The Trinitaria flowers and Orégano brujo leaves were washed, dried, ground and extracted by maceration with 70% ethanol. The extracted product was filtered and then concentrated by evaporation with continuous air flow. The antibacterial potential against E. coli, S. aureus and P. aeruginosa was evaluated by the Kirby-Bauer disk diffusion method. It was determined that neither of the two plant extracts showed antibacterial activity at concentrations of 0.5, 0.25 and 0.125 ug/mL. A second experimental process was carried out using Standard Serial Dilution and modify technique with the addition of 0.1 mL of the plant extract plus 0.1 mL of each bacterium. The bacterial reduction of the Trinitaria extract was between 12 to 18% in E. coli and S. aureus bacteria. Orégano brujo, had a bacterial reduction of 45% for both bacteria. As a future engineering goal, the bioactive compound with antibacterial activity will be isolated, in order to carry out a chemical characterization for the development of a new natural antibiotic.

Awards Won: