Peptides with Antimicrobial Activity to Inhibit Pathogenic Bacteria and Yeast Growth

Cintron, Bianca

Antimicrobial Peptides are evolutively conserved components of the innate immune response. Their chemical and physical characteristics correlate with their microbicide activities which are exerted through pores formation in the pathogen membranes or inhibiting bacterial metabolism. The purpose of this research is to determine the effectivity of Peptides with antimicrobial properties on four different bacteria and a yeast. Peptides will be obtained from terrestrial microorganisms cells, wild Drosophila melanogaster and yeast Saccharomyces cerevisiae. These are expected to inhibit the growth of common bacteria and yeasts in the environment that are considered malignant to the human Immune System. The hypothesis is that the selected Peptides contain antimicrobial activity to inhibit the growth of bacteria and yeast. Terrestrial microorganisms cells, wild Drosophila melanogaster and yeast Saccharomyces cerevisiae were collected and extracts were prepared. Petri Plates were inoculated with bacteria E. coli, B. subtilis, S. epidermis, S. marcescens and yeast C. bombicola. The Peptide extracts were put in each of the identified areas and were incubated for twenty four hours. The obtained data evidenced that the three selected Peptides contain antimicrobial activity against bacteria and yeasts. The results exceeded the limits in the inhibition halos stipulated by the Minimal Inhibitory Concentrations. The experimentation was repeated using newly prepared liquid extracts; and another experimentation was done after lyophilization. The repetitions evidenced greater inhibition halos. It is concluded that the hypothesis was true. The Peptides have a wide spectrum of activity against pathogenic bacteria and yeast, making them attractive candidates for a new kind of antibiotic.

Awards Won: