Antimicrobial Properties of Stingray Mucus

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Previous research has suggested that wound healing properties in stingrays may be due to an antimicrobial substance in the animal's epidermal mucus. To investigate this, the minimum inhibitory concentration (MIC) of the mucus against the various strains was determined and compared. Fresh epidermal mucus was collected from 16 Cownose stingrays. Tubes of LB Broth were inoculated with six common bacterial strains (E. coli, P. flourescens, B. subtilis, S. aureus, P. aeruginosa, and M. luteus). For the MIC assay, varying concentrations of mucus were inserted in the tubes of LB broth. As a control 4 tubes containing only the varying concentrations of stingray mucus and LB broth were prepared. The test tubes were incubated for 24 hours and then optical density was measured and used to determine the MIC. In addition, disk diffusion assays were conducted to determine the effectiveness of the mucus against the same six bacteria. No inhibitory ring was clearly defined around any disc placed on the cultures, but a small area could be scene to suggest partial inhibition. The minimum inhibitory concentration was found to be much greater than originally expected. This project showed that Cownose ray mucus could still be a possible answer to the problem of antibiotic resistant bacteria. Through this study many methods and procedures were improved, and continue to be improved, to ensure better results in future research.

Awards Won: