Novel Approach to Antibiotics and Antifungals: Testing the Effectiveness of Azadirachta indica Extracts

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Preliminary research has shown that certain natural substances can be used without the fear of a new resistant strain developing. Thus, this project aims to determine the effectiveness of natural substances as antibacterial and antifungal. Early research suggested that the neem oil would be the most effective extract because it would envelop the bacteria and fungi. Cultures of bacteria, specifically Staphylococcus epidermidis and Serratia marcescens, and cultures of fungi, specifically Aspergillus niger and Saccharomyces cerevisiae, were cultured and placed in separate plates. Zones of inhibitions were created using the neem leaf extract, the neem soap, the neem oil, a water control, and just regular soap control disks. The diameters of the zones where growth has stopped, were compared using statistical significance tests to see if any of the natural extracts were more effective than the controls. The zones that were significantly different from the controls' zones were compared amongst each other to see if one type of extract was more effective than the others. This analysis has shown that the natural substances are extremely effective and significantly stronger than antibiotic and antifungal substances and the artificial substances in the soap. Remaining organisms were considered to be possible resistant strands. Thus, repetitions were completed to determine if any strands survived treatment. Since the bacterial and fungal growth was still inhibited without resistance, it became apparent that the neem extracts could have many practical purposes.

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