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Antibiotic Resistance to Rifampin, Streptomycin, and Penicillin in Grasshopper Bacterial Isolates

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Abstract

Antibiotic resistance is a growing epidemic from excessive use of available antibiotics that is leading to a global health crisis. As more antibiotics are being misused and mutations, the susceptible bacteria die, leading to the resistance strands to be prominent in the population. From this increasing resistance, it has the great potential to make killers of out bacteria that was formerly harmless. In this experiment, a grasshopper was dissected, and different bacterial isolates were separated and grown in lawns. In each of the LB plates, Rifampin, Streptomycin, and Penicillin discs were placed. After one and two days, the diameter of no growth were measured in mm. The bigger the diameter, the more susceptible the bacteria are to the antibiotic. Out of the 17 plates grown, only two plates had a ring for Penicillin. Whereas, Rifampin had 16/17 plates had rings to show susceptibility. While Rifampin had the most rings, Streptomycin had the largest in diameter rings. From these results, it can help see how resistant the bacteria are in grasshoppers to see if they are a vehicle of antibiotic resistance transmission.

Method

17 isolates were extracted from the plate and grown in LB. Each isolate was then grown into a lawn. After two days of growth the three antibiotic discs were placed onto each plate.

Results

17 of the plates grown shown results. The larger diameter of a ring means that it is more susceptible, meaning the bacteria dies off. The smaller rings mean that the bacteria does not die with contact to the antibiotic and is resistant. Some plates, with a diameter of 10 mm means that there were not growth because that the diameter of the disc (Figure 1). The combined diameter in all 17 plates in this experiment shows that Streptomycin had the most bacterial deaths, where as Penicillin had more bacterial resistant to the antibiotic (Figure 2).

Importance

Grasshoppers can contribute to the to the spread of antibiotic resistance by acting as a vector. Grasshoppers are vital to the ecosystem and are, in fact, the most consumed insect among humans. Antibiotics resistance can be analyzed through the role of grasshoppers.

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