Are We Butchering the Effectiveness of Antibiotics?

Guiles, Kylie (School: Mancos High School)

This project was conducted due to the growing issue of antibiotic resistance. In commercial feedlots animals are often pretreated with antibiotics as a precaution. When an animal is treated with unnecessary antibiotics, resistance grows. This is a problem for humans because feedlot animals are used primarily for human consumption, and when humans consume antibiotic resistant animals their antibiotic resistance is built up. The purpose of this project is to determine the optimal treatment plan when attempting to reduce antibiotic resistance, and cure Escherichia coli with penicillin. This was tested using 12 petri dishes; half of the petri dishes were pretreated with penicillin and half were treated after they were infected with E. coli. There were four different treatment plans: Sick (infected with E.coli before introduced to penicillin), Control-sick, Pretreat (introduced to penicillin before infected with E.coli.), and Control-pretreat. Petri dishes in each of the four groups received the following treatments: one dose, five doses, and ten doses of antibiotics. The results of the project indicated that the optimal treatment plan is pretreating with penicillin, along with one additional dose of penicillin after the animal is infected. This concludes that pretreating E.coli with penicillin and then treating with another five to ten additional doses is unnecessary because one dose was enough to kill all the bacteria in the pretreated petri dishes which shows that treating animals with five to ten doses is unnecessary. The redundant doses of antibiotics given is contributing to the world-wide epidemic of antibiotic resistance.

Awards Won: