If we add dog saliva to non-harmful *E. coli* that is growing in petri dishes, then the growth of *E. coli* will be reduced because of the enzymes called Lysozymes that are found in dog’s mouths for every breed. Our experiment examines the impact dog saliva has on the growth of *E. coli*. We began by using filter papers to swab the inside of nine dogs’ mouths. We then made agar, and rubbed non-harmful *E. coli* on to the agar plates. At this point we added the filter papers to the center of the agar plates and put them in an incubator at body temperature for 72 hours. The results indicated there that dog saliva is an effective antibacterial agent. When comparing the bacteria growth in the petri dishes that dog saliva was added to, we discovered that much less bacteria had grown than in the petri dishes containing human saliva. There is a strong correlation between the dog’s living environment and how effective their saliva was. Outside dogs have more bacteria growth in the petri dish than that of indoor dogs. This could be due to the outdoor dogs being exposed to a larger variety of bacteria than the indoor dogs. There was a negative correlation between a dog’s environment and the amount of bacteria present in the petri dishes containing saliva and *E. coli*, which raised questions that we investigated further with refined focus. The follow up experiment confirmed our original results.

**BACKGROUND INFORMATION**

Lysozyme: “An enzyme that kills certain bacteria and prevents overgrowth of bacteria in the mouth.” They break the chemical bonds in bacteria cell walls.

Dog’s saliva contains enzymes called Lysozymes. These enzymes are responsible for killing bacteria in the dog’s mouth and preventing bacteria from growing too rapidly. This, in turn, helps the dog clean bacteria out of its wounds. However, while dogs have Lysozymes, they also carry a variety of other bacteria that can be harmful to humans. The purpose of this experiment was to test if dog saliva could be used as an antibacterial agent for wounds on both dogs and humans.

**HYPOTHESIS/PREDICTION**

If we add dog saliva to non-harmful *E. coli* that is growing in petri dishes, then the growth of *E. coli* will be reduced because of the enzymes called Lysozymes that are found in dog’s mouths for every breed.

**PROCEDURE**

We:
1. Made the Agar. (Boil water while slowly adding and stirring in Agar powder and beef stock. Then, pour the Agar into petri dishes and allow to harden overnight.)
2. Dipped a metal rod into genetically mutated *E. coli* that is not harmful to humans and then rubbed it across the whole petri dish. We rubbed it on one half, and then slowly rotated the petri dish to apply the *E. coli* to the next two quarters. We were careful to apply gently and avoid gouging the Agar.
3. Swabbed nine dog mouths and two human mouths with filter papers and stored them in separate vials labeled with the name of each test subject.
4. Set the filter papers covered in dog saliva and distilled water in the center of the petri dishes.
5. Put petri dishes with bacteria and filter papers in an incubator set to human body temperature for seventy-two hours.
6. Analyzed bacteria growth using a colony counter and a ruler.

In conclusion, we determined that dog saliva is an effective antibacterial agent. When comparing the bacteria growth in the petri dishes that dog saliva was added to, we discovered that much less bacteria had grown than in the petri dishes containing human saliva. There is a strong correlation between the dog’s living environment and how effective their saliva was. Outside dogs have more bacteria growth in the petri dish than that of indoor dogs. This could be due to the outdoor dogs being exposed to a larger variety of bacteria than the indoor dogs. Our test results warrant additional confirmatory tests in which we would also increase our sample size for humans.