CALIFORNIA STATE SCIENCE FAIR
2004 PROJECT SUMMARY

Name(s)
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Project Number
J1334

Project Title
Do Different Diets in Ruminant Animals Affect the Microorganism Colony Growth?

Abstract

Objectives/Goals
The purpose of this experiment is to find out if different diets of the ruminant species affect the growth of microorganisms.

Methods/Materials
Materials:
10 samples of steers on grain, steers on hay, goats on grain, and goats on hay,
40 test tubes with rubber corks, Incubator, nutrient agar plates, rubber gloves
Electronic gram scale, 40 250ML jars
Procedure:
1.Take all samples of manure. Remember the samples aren#t taken from one animal, but rather a pool of different animals from that diet and species.
2.Dilute the manures 1- 100 (manure to water).
3.Put 5 drops of the dilutions on the plates and spread it with the spreader.
4.Seal the plates with parafilm.
5.Put the plates in the incubator for 48 hours.
6.At the end of 48 hours take the plates out of the incubator and count the number of colonies growing on the plates by doting the colonies with a sharpie.

Results
The results show that the steers on grain ranked the highest in microorganism growth. The goats had the lowest counts and the goats on grain ranked the absolute lowest.

Conclusions/Discussion
In conclusion, the steers that were fed grain had more microorganisms growing than the other samples. The goats on grain had the least amount growing. This is surprisingly just what I expected. The steers have the largest digestive systems so it gives the manure more time to pick up any microorganisms. I also thought that the grain diets would have a higher count because there are more nutrients. On this I was partly correct. This was true for the steers, but not for the goats. This may have been because the ten samples I took from the goats on grain were young so they might not have had fully developed rumens. Therefore, this may be why the goats on grain had the lowest count.

Summary Statement
The purpose of this experiment is to find out if different diets of the ruminant species affect the growth of microorganisms.

Help Received
Dr. Jim Selgrath and Dr. Ralph Phillips on the correct methods for conducting experiment.