



**CALIFORNIA STATE SCIENCE FAIR
2014 PROJECT SUMMARY**

Name(s) Makenzie G. Flach	Project Number 34238
Project Title What Is the Effect of Ammonium Chloride Supplementation on Urine pH in Meat Goats?	
Objectives/Goals I was interested to learn if supplementing a Boer goat's diet with ammonium chloride would affect the urine pH levels in meat goats to help prevent urinary calculi. My ultimate goal is to help goat farmers, like myself, prevent urinary blockage diseases in goats and possibly other livestock.	
Abstract Methods/Materials 1. Divide 15 Boer evenly goats into 3 separate pasture spaces. 2. One week prior to start of project, feed each group alfalfa and pasture grass so that each goat has a neutral starting point to see if the ammonium chloride really affects the pH levels in their urine. Collect urine pH levels from each goat to obtain baseline levels & record data. 3. At start of project, feed each group of goats the assigned type of feed daily for 6 weeks. 4. Weigh feed daily each morning using an electronic scale to ensure proper feed amounts given to each group. 5. Observe all goats daily to ensure good health and feed consumption. 6. Using a homemade urine collection tool to obtain urine sample. Collect urine sample from each goat 2 times per week for 6 consecutive weeks. 7. Obtain urine pH levels from each sample using a pH meter probe.	
Results Data shows that the urine in goat groups A and B who were fed ammonium chloride in both medicated feed or as a supplement had a lower urine pH level (resulting in higher acidity). Group C, who did not receive ammonium chloride, had a higher urine pH level over groups A and B.	
Conclusions/Discussion My investigation showed that the urine pH levels in goat Groups A and B who were fed ammonium chloride in both medicated feed or as a supplement did have a lower average urine pH level over a 6 week period. Group C who did not receive ammonium chloride in the feed at all had a higher average urine pH level over the 6 week study. The lower average pH level measurements in Groups A and B means that their urine was more acidic which is beneficial to the goats' health because the acidity in the urine breaks down the calcium (stones) and prevents urinary calculi disease. I noticed in my data that there is an indication that the intake of ammonium chloride already produced in the feed is perhaps more efficient than feeding ammonium chloride as a supplement in alfalfa hay.	
Summary Statement Determining if feeding meat goats ammonium chloride would have a favorable effect on urine pH that would result in a lower risk of urinary blockage and ultimately producing healthier goats.	
Help Received Mother helped type project, Father helped make urine collection tool, Supervised by veterinarian	