

# Cows Not Hurt By High Salt Intake

Research Studies Develop Answers To Many Questions on Salt Mixes

By W. J. Pistor

Although the use of salt in supplemental feed mixtures on the range to limit the amount eaten by cattle at any one time has been in general practice on Arizona ranges for a number of years, range-men have been somewhat concerned about possible effects on the cattle. Reports have been circulated that high salt intake may cause abortion and sterility. Other questions also have been raised regarding ingestion of large amounts of salt by the cattle.

## Research Studies Made

Research has been undertaken by the University of Arizona to obtain some of the answers to these problems. Experiments already have been completed under a project by B. P. Cardon, associate animal pathologist and associate animal husbandman; J. C. Nesbitt, research assistant, Animal Husbandry Department, and the author.

To obtain information on the influence of high salt intake on the physiology of pregnancy, special experiments were conducted. On November 3, 1949, five Hereford cows ranging in age from 5 to 8 years were placed on a maintenance ration in which 1 pound of salt was added daily. These animals were placed in individual pens and the amount of ration was controlled so that the complete pound of salt was consumed each day.

## Check Salt Content of Blood

Four of these animals were pregnant, having been bred during the previous April and May. At periodic intervals the salt content of the blood, urine and milk was determined. Also arrived at was the salt content of the blood of the calves.

Salt feeding and testing continued until May 12, 1950, at which time the animals were returned to the herd. Blood samples were again taken from these animals on June 27, 1950.

## Showed No Ill Effects

Throughout the duration of the experiment, all cows and calves appeared healthy. All animals had a normal appetite and showed no ill effects from salt feeding. The four bred cows calved normally. The fifth cow was bred after the conclusion of the test, and also calved normally.

In another experiment, a 1000-pound Guernsey cow with rumen fistula (opening) was used. The animal had normal access to food and water before the experiment was started. One pound of salt dissolved in 6 gallons of water was placed in the rumen through the fistula.

Within an hour there was an increase in salt concentration in the urine and in 2 hours the concentration increased in the blood. In 24 hours the values were again normal.

## Water Intake Reduced

Since the amount of water may be limited to range animals after they have consumed the salt concentrate, an experiment also was designed to determine the changes in salt concentrations when the water intake was reduced. The cow was kept from food and water for 36 hours before the tests were started.

Two pounds of salt and only 3 gallons of water were used. At the end of 8 hours when the blood showed 642 Mg percent NaCl (salt) there was evidence of nervousness, trembling and lack of coordination.

After 12 hours, the animal was in an extremely critical condition. Trembling was excessive and she was able to stand only with help. In order to save the animal, the salt was washed from the rumen by allowing the animal to drink and then letting the fluid drain out through the fistula. This was repeated several times and seemed to relieve her distress. Twelve hours later, with the exception of being quite nervous and somewhat stiff, she appeared normal.

In the second part of this experiment, the same conditions and treatment were repeated, except the animal was given all the water desired. The blood NaCl (salt) increased to 595 Mg percent but there was no distressing reaction.

## "Salt Poisoning" Reported

Each year numerous reports come from ranchers and veterinarians on death loss due to "salt poisoning." Most of these cases occur on ranges with little water or where the ranchers utilize native forage at some distance from available water by feeding the supplement. In areas where the salt concentrate mixtures are used, the animal may or may not have access to a sufficient amount of fresh water. Consequently the relationship between salt and water intake is important.

Additional experiments showed that if water is also restricted at the time salt is given, a relatively small amount of salt will be fatal.

Apparently the kidneys cannot eliminate salt at a higher rate than above 2.4 percent NaCl. This means that water must be consumed so that the salt absorbed can be eliminated. In those animals which die from salt poisoning, the chloride concentration in the blood rises 35 to 60 percent.

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