

Metabolic diseases: disease problems of Markhoz (Iranian Angora) goats

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Abstract: A metabolic disease technically refers to altered metabolism, but as used in this context refers to conditions which have their origin in nutrition or management as contrasted to infection. There are a number of such conditions which can occur with sheep and goats, but seldom represent a major constraint under commercial conditions. Included in these are acidosis, bloat, grass tetany, milk fever, posthitis, swelling disease (edema), urinary calculi, white muscle disease, etc., Few of these actually cause serious troubles with goats under grazing conditions. [Farzad Abdollahzadeh, Tofiq Froghi. **Metabolic diseases: disease problems of Markhoz (Iranian Angora) goats.** *Life Sci J* 2012;9(4):265-269] (ISSN:1097-8135). <http://www.lifesciencesite.com>. 38

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1. Introduction

In a broad interpretation the term "disease" includes anything which affects the well being of the animal., however, most people think of disease in a more restricted sense as those due to infection. The broader interpretation may include infectious and parasitic disease, as well as nutritional or metabolic disorders, toxic plants, and in the case of the Angora goat, a largely unique problem of "offshear" or freeze losses. The Angora often exhibit symptoms of "ill thrift" which is apparently predisposed by their high nutritional requirements. For this reason they may be slow to recover, even after disease or parasites are removed as a problem.

2. Acidosis

Refers to overloading on grain in an animal which is not adapted to this type of feed. The result is a high acidity of the digestive system which can kill the animal, but more frequently cause the animal to go off feed for a variable period of time. There is little reason or logic to free choice feeding of goats on high grain rations, and thus little reason to incur this problem except for the case of accidental access to feed.

3. Bloat

Bloat is an extended rumen filled with gas which can result in death. It usually results from consuming fresh legume forage which also rarely occurs with the Angora under range conditions. Goats are less subject to bloat than some other species such as cattle, and they do not have a high dietary preference for or access to legumes such as alfalfas or clovers. There are two types of bloat which may have different origins. These are free gas bloat or frothy bloat. If observed early enough, some types of bloat can be treated by passing a stomach tube to release the gas. Prevention is more important

and consists of altering the type of feed and/or by the use of anti-bloat agents in the feed. Rumensin which is often used with goats as a coccidiostat tends to reduce bloat. Other compounds in this group probably have similar properties. Poloxalene is a commonly used bloat retardant or can be used for treatment. It should be effective if taken regularly (daily), but the method of administration (i.e., in feed or salt) can present problems. It can be used to treat frothy bloat when given as a drench or directly into the rumen as an injection or by stomach tube.

4. Grass tetany

Grass tetany results from an electrolyte imbalance as a result of consuming fast growing highly succulent forage. The condition is rarely observed in Angora. An affected animal will die unless they are treated, but most can be saved by providing electrolytes in the form of glucose solutions (containing magnesium) in the vein.

5. Milk fever

Milk fever is a similar condition with the lactating animal which is producing a large volume of milk. Thus this problem appears to be rare in the Angora. It is caused by a rapid lowering of blood calcium as calcium is deposited in the udder following parturition. It can be treated by the use of electrolytes such as calcium gluconate in the vein or possibly under the skin or in the peritoneum. The author has not observed white muscle disease in the Angora, but it may well occur in areas which have low selenium levels in the soil. It is due to a deficiency of vitamin E or selenium or a combination of these. It can be treated or prevented by providing these as supplements in the feed, or injection. Selenium should only be used as directed, as it can be toxic.

6. Posthitis

Inflammation of the prepuce is a condition which will frequently be observed in goats. It is restricted to the male as it represents a scabby ulceration over the sheath or prepuce. It may result in an inability of the animal to extend the penis or urinate. The condition tends to result from one or more of three situations. One of these is a high protein feedstuff in which the excess nitrogen is excreted in the urine as urea which changes the pH of the urine causing irritation of the tissue of the prepuce or sheath. A second condition is that the animal spends a lot of time around barns or contaminated bed grounds resulting in unsanitary conditions which may predispose infection of this area. The third condition is the presence of a specific organism belonging to the *Cornebacterium* (*C. renale*) group which is often found in the urine or under unsanitary conditions. This condition may be found in either intact males or in wethers and can at times represent a high infection rate. Testosterone implants have been used in some countries to combat the problem as it causes the wethers to extend their penis and reduce the irritation from the urine or the threat of blockage. This material is not available to livestock producers in the United States. Another preventative is not to overload the animal on protein. However, under some grazing conditions a high protein intake can occur from natural vegetation. Antibiotics in the feed, such as terramycin or aureomycin as used in feedlot rations, will tend to reduce the likelihood of infection and to reduce the problem. This solution is somewhat impractical for the grazing animal. Treatment is possible, but is time consuming and may be slow to yield results. It consists of cleaning the infected area and removing the scab if the animal is unable to urinate. A good antiseptic solution, such as iodine scrub or hydrogen peroxide or a mild chlorine solution can be used. The use of a medicated antibiotic ointment applied to the area and in some cases an injection of an antibiotic is sometimes advisable.

7. Urinary calculi

waterbelly or urolithiasis can also be a problem of Angora males. It can occur on the range, but under production conditions it tends to be restricted to potential breeding males which are receiving a high level feeding of formulated rations. It is also often seen in wether goats kept around the barns or in pens as lead animals. It is caused by formation of stones or calculus which blocks the urinary tract preventing urination and can cause rupture of the bladder. It can largely be prevented, but treatment has limited value. For young males to be fed in confinement, special rations should be

formulated. The problem often results from animals being fed high phosphorus feeds such as rations containing grains (sorghum) and oil meals (cottonseed meal) and alfalfa. This problem can largely be prevented by insuring that the calcium to phosphorus ratio is 2 to 2.5:1. This may require the addition of calcium supplements such as Calcium Carbonate to the ration. With valuable males it may also be advisable to include in the ration 0.5% ammonium chloride or 0.6% ammonium sulfate to acidify the urine. Potassium chloride may also have a similar effect, but would be preferable only if the ration tended to be low in potassium. Also salt (sodium chloride) should be included in the ration to insure that the animals drink plenty of water. The latter practice reduces the concentrations of chemicals in the urine and the tendency for calculus formation. It is important to insure that the animals have access to water (not frozen) on a continuous basis as calculi cases often show up during or after a period of water deprivation. The condition may be treated by surgical intervention, but this course of action has little value for goats since the cost would exceed the value of the animal. In some cases the initial blockage occurs in the urethral process (the small filiform appendage at the end of the penis). If this is the case it is possible to extend the penis and clip this off with no adverse effect to the animal. Any more drastic surgery would require veterinary assistance and likely leave the animal useless for breeding purposes. If detected in the very early stages some cases may be reversed by administration of urine acidifying agents. One of these is methionine hydrochloride, administered orally as a paste, or a solution of ammonium chloride used as a drench. The latter material could potentially be toxic or caustic and should be used with care. Relaxing drugs (such as Atropine) may be used to assist in passing stones. If treatment is to be effective, an early diagnosis must be made. The symptoms include dribbling of urine, sand or crystals around sheath, obvious signs of discomfort including biting or kicking at the sheath or belly.

8. Swelling disease

Waterbelly or ventral edema may sometimes be confused with urinary calculi, but it has totally different physiological explanation. It is largely due to anemia or fluid loss in the tissue with the excess fluid accumulating along the underline or in the legs (the lower part of the body). Affected animals do not normally appear sick, but the condition is usually evident to the observer. It is rarely fatal, but is certainly an indication that all is not well with the animal. This condition is almost totally restricted to reasonably high producing

Angora goats indicating that it is nutritional or physiologic in origin, and is associated with the high level of mohair production. It appears often to be increased or predisposed by parasitism, low protein intake or some type of stress such as shearing. Prevention should call for insuring that the animals are not suffering from a high level of parasitism and that they are receiving an adequate level of protein and to minimize stress. Hypoproteinemia may not necessarily result only from a low protein content in the ration, but also from a high protein (or a specific amino acid) requirement of the animal as a result of a high level of fiber production. An iron deficiency is sometimes considered to be a predisposing factor. The condition is often seen in young males being developed for breeding purposes, but since this condition is a strong clue that the animal may be "over bred or otherwise unsuited" for their environment, it may not be desirable to use this type of animal for breeding purposes at least as a stud animal, even if they recover. Treatment consists of removing the above mentioned predisposing conditions and in extreme cases treatment with a diuretic (such as lasix) to encourage the animal to pass the excess fluid accumulation. A complete or total explanation for this condition is not available at present.

9. Pregnancy toxemia

Ketosis, twin lamb or kid disease or pregnancy disease is often listed as a metabolic disease. It is due to incomplete breakdown of fat among pregnant animals requiring a great amount of energy (glucose) during late gestation. The writer has not observed this as a problem with Angoras but it presumably can occur. The small amount of fat on Angoras and their tendency to abort partially protect them from pregnancy toxemia. Prevention would consist of providing adequate energy during late pregnancy. Treatment might consist of oral administration of molasses or propylene glycol.

10. Abortion

Abortion occurs more frequently in Angora than other types of farm or ranch livestock. Goats in general and the Angora in particular, are highly predisposed to this problem. It is generally realized that this condition is related to nutrition, primarily a deficiency of size or energy or to stress which disrupts normal feeding. This problem was discussed more thoroughly in the chapter on reproduction.

Toxic Plants: Due to the nature of their grazing habits and conditions under which they are raised, toxic plants are one of the major problem areas for Angora goat producers. Discussing this problem is

made more difficult by the realization that toxicity is a relative term in that most feedstuffs or forages can have adverse effects at some time or some place or in some amounts. For instance, some favorite feedstuffs can cause trouble. Alfalfa may cause bloat and a condition known as "red gut," and in some cases a high estrogen content interferes with reproduction. Small grain forages carry a threat of producing "swellhead" or photosensitization. Sorghum forages carry a threat of prussic acid poisoning. Overfeeding on grain carries the threat of acidosis or enterotoxemia. Cottonseed or cottonseed products have the potential, under some condition, of causing gossypol toxicity. Toxic plants are present on almost all rangelands, and the ability to use these lands is based on the premise that animals will not eat these plants or will not eat them in sufficient amounts to cause trouble. Many toxic plant problems result from overstocking (sometimes intentionally for control of noxious plants), forcing the animals to utilize plants which they might otherwise ignore. Additionally, goats may be included in grazing programs in the belief that they are less likely to graze toxic plants or are more resistant to them or that goats may be used in some causes to remove plants (leafy spurge) which constitute a problem with other livestock species. It is important for individual producers to know the potentially troublesome plants in their area, the likelihood of their causing problems and the symptoms they produce. There are a number of reviews of toxic plants (see James, *et al.*, 1980, Sperry, Dollahite, Hoffman and Camp, 1977 and Rowell, undated) which collectively list approximately 100 plants which have the potential of causing problems, and still do not list some of those which can be a threat to goats. Many of the more common plants found on rangelands are listed as a threat under some conditions. These include most types of oaks, mesquite, white brush, black brush, a variety of milk weeds, and number of plants in the nightshade or Solanum group, etc. Fortunately the writer has had little experience with many of these potential problems. In many cases a good source of information may be obtained from producers who have had long experience running goats in a given area. Some of the plants have not been reported to cause trouble with goats, but they are listed in the belief that this may reflect the fact that goats are not routinely produced in areas where these plants are present. The current tendency for goats to move into new areas may result in losses in the future. Admittedly, this list does not contain all potentially toxic plants and tends to emphasize the plants found on the range lands of the Southwest. In addition to this listing, a few individual plants or conditions or groups of plants will be discussed in more detail.

Losses due to toxic plants are more likely to be observed on overstocked ranges, or when hungry animals are turned to pastures where toxic plants are a threat. A number of poisonous plants cause photosensitization or "swellhead" (sensitivity to light). These conditions are usually due to liver damage, but some plants result in this condition without evidence of liver damage. If caught in the early stages and removed to shady or protected areas some of the affected animals will recover, depending on the amount of liver damage. More importantly, if producers become proficient in identifying the early symptoms they may be able to take protective action (ie. move to pens or to new pastures) before heavy losses occur. A number of plants are nitrate accumulators (pigweed, carelessnessweed, kochia, etc.) and thus can be toxic. These tend to be those found around barns or pens where the soils have a high level of fertility, but the problem can also be encountered under field conditions. Care should be exercised in allowing hungry animals access to the areas or type of plants mentioned. Nitrates or their byproducts bind with hemoglobin in the blood to reduce the oxygen carrying capacity. There is little warning of toxicity and death may be the first evidence, but occasionally labored breathing, particularly after being stressed may be seen. Some plants are also selenium accumulators, but these are not common in areas where Angoras are normally produced.

11. Oak

Oak poisoning is rare in goats as many Texas ranges have some type of oak as an important forage for goats, and goats may be included in the range management program to control or utilize oaks. Problems are rare, but heavy losses are known to have occurred in cases where goats are forced to live almost exclusively on oak forage. Since most parts of the oak plant are low in feed value, losses may have been due to a combination of starvation and poisoning. Observed losses have been mostly with broadleaf type of oak such as scrub oak or blackjack oak. Early growth or buds of shin oak are known to be dangerous to cattle, and potentially goats as well. The problem with oak is tannins or tannic acid, and the feeding of an anti-acid such as calcium oxide (slaked lime) has been shown to be beneficial in preventing losses in cattle. It is usually administered in a salt or mineral mixture at 8 to 10%. In theory, animals such as the goat which rely heavily on the oak as a feed source might benefit from routine administration of calcium oxide. The writer has made repeated attempts to demonstrate such a benefit without success, but in those cases no death losses were encountered even in the control groups.

However, since the tannin in these plants interferes with protein digestion (and perhaps energy sources as well) a good response can usually be obtained by providing protein and energy to animals utilizing the oak plant extensively.

12. Hydrocyanic or prussic acid

Hydrocyanic or prussic acid poisoning represents a threat with certain groups of plants. The plants most commonly put into this category are the various forms of sorghum. However, other plant including chokecherry, plum, flax, mountain mahogany, and elder also fit into this category. These plants represent major threats after they are wilted or damaged by drought or freezing, and should not be used under these conditions without testing. Sodium thiosulfate or methylene blue are specific antidotes for hydrocyanic acid poisoning, but have little value because the time available for administration is short. Some specific plants with which producers in Texas should be familiar with before exposing goats to them are Guajillo, Coyotillo and Sacahuista. Guajillo is an important leguminous forage plant for goats, but animals existing almost exclusively on this plant develop "limberleg" or "wobbles" of the rear legs. Fortunately the condition is slow to develop and heavy losses can be prevented by close observation and removal to other areas or management system as soon as symptoms appear. Coyotillo also produces a condition sometimes called "limberleg", but the problem is much more acute than with Guajillo. Producers are able to use rangelands where this plant is present by developing a population of animals which either do not eat the plant or which have developed a tolerance for the plant, and exercising caution in introducing new or naive animals to these areas. The entire Sacahuista plant is toxic, but problems primarily occur when sheep or goats consume the blooms or seed heads. These plant parts are highly toxic, but are not a threat except at certain seasons of the year (summer or fall). This plant causes photosensitization or swellhead and animals exposed to the plant should be observed carefully at critical times in order that appropriate action can be taken. It is possible to run goats on pastures where Sacahuista is present depending on the stocking rate, amount of Sacahuista present, the amount and quality of alternate forage available and with careful management at critical times.

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