

B VITAMINS and THEIR IMPORTANCE TO GOAT HEALTH

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Healthy goats manufacture their own B vitamins daily in the bacterial flora of the rumen. This is necessary because B vitamins are water-soluble. The goat uses what it needs each day and excretes the rest from its body. It is important to remember that the goat does not store B vitamins in its body. Two of the B vitamins are particularly important to the goat's health -- Vitamin B 1 (thiamine) and Vitamin B 12.

A goat that is not eating is a goat whose rumen is not producing B vitamins. When a goat is sick, it usually quits eating and/or drinking-- goes off feed. This is particularly serious in a kid, whose rumen is not functional until at least six weeks of age and whose immune system doesn't fully develop for many months. When a goat becomes sick and goes off feed, B vitamins must be provided. Injectable Fortified Vitamin B Complex is a good way to add B vitamins. The word "fortified" in the name is crucial; "fortified" means that the vitamin complex contains 100 mg/mL of Vitamin B 1 (thiamine). This strength of thiamine is extremely important. Fortified Vitamin B Complex is available over the counter.

Vitamin B 1 (thiamine) is necessary for carbohydrate metabolism and normal neural activity. When metabolism slows down as a result of inadequate amounts of thiamine, cells die and brain swelling occurs. With Polioencephalomalacia (Goat Polio), there is a shift in rumen micro-organisms and a change in metabolism that consumes all the thiamine made in the rumen. A high carbohydrate diet (lots of sacked grains) containing high levels of sulfur (greater than 0.30% of total diet) appears to be a major cause of Goat Polio. Thiamine injections are required to overcome this condition. Additionally, less sacked grains (carbohydrates) must be offered as a percentage of total diet to allow the rumen flora to return to normal. Soybean meal is a great protein source for goats, but it also contains a high level of sulfur. High-protein diets with soybean meal as the primary protein source along with the "sulfate" variety of many minerals can lead to a diet high enough in sulfur to create polioencephalomalacia.

Thiamine deficiency in a goat can produce life-threatening conditions. The producer is advised to administer thiamine whenever a goat becomes ill. Usage of Fortified Vitamin B Complex is even better, because it contains Vitamin B 1 as well as other necessary B vitamins. The writer uses four cc's per hundred pounds bodyweight every 12 hours. Since all B vitamins are water soluble, overdosing is difficult and the margin of safety is wide. Better too much than not enough when administering B vitamins.

Vitamin B 12 is a red injectable liquid that in many states is a prescription item. Goats heavily infected with worms become anemic, and Vitamin B 12 is an essential part of bringing them back to health. B 12 injections may be required over a period of weeks or months, depending upon the severity of the anemia. In order to avoid repeated injections during long-term treatment, the producer can add B vitamins to the feed of a

severely-anemic goat by using a swine vitamin premix or top-dressing feed with Show Bloom, both of which should be available from a local feed store or from a mail-order house like Jeffers. B vitamins, especially B 12, can actually "jump start" the rumen function and get a goat eating again. (People cannot make B vitamins like ruminants can; that's why humans have to take B-12 injections or eat a diet high in B-12.)

Producers living in geographic areas with cobalt deficiencies should know that a sufficient cobalt intake is essential for the manufacture and utilization of Vitamin B 12. Assume that cobalt is deficient and make sure it is in all mineral or protein/energy supplements -- as a measure of safety. It's not expensive. Cobalt requirement in the goat's diet is believed to be 0.1 parts per million, although not much research has been done in this area.

The primary reason that this writer discourages producers from formulating and/or mixing their own goat feed is that vitamin and mineral interactions are so critical that the making of proper feed should be left to knowledgeable professional livestock nutritionists. At certain levels, specific items work with each other; at other levels, they inhibit nutritional uptake. Some ingredients are cheap but are not readily absorbed by the goat's body -- oxides (except magnesium oxide). Others are more expensive but are better utilized nutritionally -- sulfates, chlorides, carbonates. Feed components need to be biologically active.

The most difficult part of raising goats in any sort of managed environment is nutrition. The information contained in this article is proof of the importance of this fact. This writer thanks Kent Mills, nutritionist in charge of technical services for goats, sheep, and wildlife, at HiPro Feeds in Freonia, Texas for furnishing technical data used in preparation of this article.

Addendum:

Other causes for polio besides a shift in rumen flora that interferes or reduces thiamine availability include ingestion of thiaminase producing plants such as brackenfern, ingestion of moldy feeds, and use of some drugs including thiabendazole, levamisole, and amprolium (Corid). The therapeutic dosage for thiamine in either its pure state or in a multi vitamin mix is 10mg/Kg every 6 hours.

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