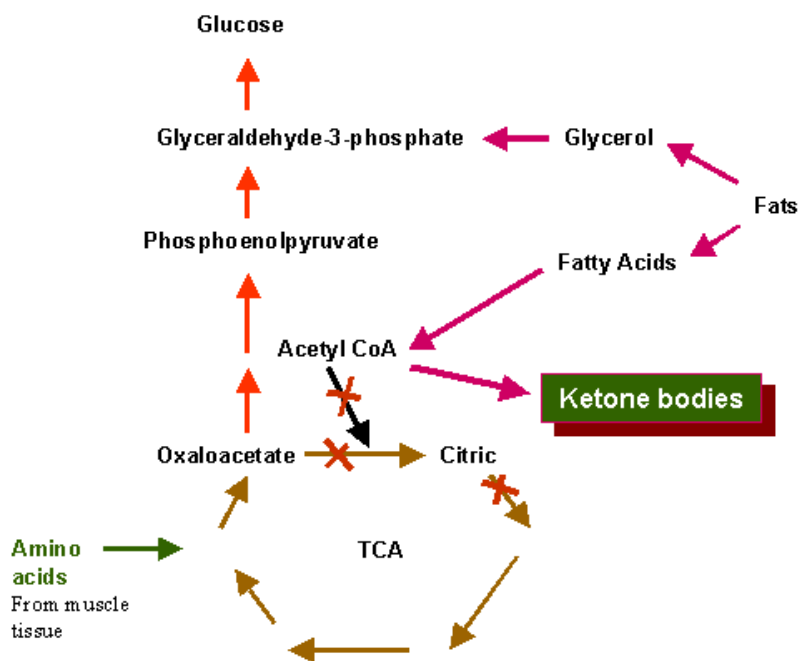


## Metabolic Diseases in Animals

### 4- Ketosis Or Acetonemia

Ketosis or acetonemia is a common metabolic disease of lactating cows occurring during the first 10 to 60 days after calving in high-producing cows. The three-week period after calving seems to be the most critical time. The disease results from a lowered blood sugar in the circulating blood, which causes the formation and release of ketone bodies. Ketone bodies (specifically acetone) are volatilized and account for the "sweetish" smell detectable on the breath, and in the milk or urine of affected cows. The incidence of ketosis is higher in older cows and high-producing cows. As cows produce milk, they become more susceptible.



### Clinical Signs

Symptoms of ketosis in dairy cattle include dullness, depression, a staring expression, rapid loss of weight, a drop in milk production, constipation, mucus covered feces, incoordination and partial paralysis. A few cows may become highly excitable. Breathing is shallow with an acetone smell in the breath. Cows will usually consume hay, straw or other roughage but generally refuse grain or concentrates. About two-thirds of the cases are primary or uncomplicated ketosis. The other third are secondary cases, complicated by such things as retained placenta, metritis, displaced abomasum, nephritis, hardware or the other problems causing cows to go off-feed. An elevated temperature may indicate that other factors are involved.

### Rumen Fatty Acids

Since ketosis is only a practical problem in ruminants, changes in the rumen have been investigated. Fatty acids (acetic, propionic and butyric) arising from microbial rumen fermentation furnish from 40 to 70 percent of a ruminant animal's energy requirements. Of these acids, propionic is by far most vital to the prevention of ketosis, and high-energy

rations favor propionate production. An increase in butyric acid would be undesirable since this acid is a potential source of ketone bodies.

Other suggestions for the prevention of ketosis include the addition of sodium propionate and propylene glycol to the dairy ration. Generally, the response to either system is slow and treatment must be extended over a period of time. Sodium propionate creates a palatability problem whereas propylene glycol is completely palatable. Twice daily feeding of 120ml of propylene glycol, beginning 14 days prior to the anticipated calving date and continued for 7 weeks postpartum, reduced the incidence of ketosis by 18 percent.

### **Diagnosis**

The ketone test is a simple diagnostic tool for determining the presence of ketone bodies and is used by veterinarians and is also available to dairymen. The test is used for determining the presence of acetone in milk and urine. Colostrum milk does not give accurate results. The urine test shows positive results before the milk test does. Even so, do not be concerned until a positive test is obtained from milk. The blood level of ketone bodies is the best test for determining the degree of ketosis.

### **Treatment**

Most accepted ketosis treatments attempt to increase blood sugar levels. Usually, about 500 ml of a 50 percent glucose solution is used. When this is the sole treatment, relapses are frequent. As a result, most veterinarians recommend intravenous injection of glucose with the incorporation of insulin as a part of the therapy. Also, some veterinarians supplement corticosteroids for a few days following treatment to boost blood glucose levels.

## **5- Bloat**

Bloat is a risk when animals are grazing young, lush pasture, particularly if the pasture has high legume content (clover, medics or lucerne). Ruminant animals produce large volumes of gas during the normal process of digestion. This gas either is belched up or passes through the gastrointestinal tract. If something interferes with gas escape from the rumen, bloat occurs.

Natural foaming agents in legumes and some rapidly growing grasses cause a stable foam to form in the rumen. Gas is trapped in small bubbles in this foam in the rumen and the animal cannot belch up the gas. Pressure builds up in the rumen causing an obvious swelling on the left side of the body.

### **Bloat in cattle**

#### **Signs of bloat**

Cattle with bloat may display the following signs:

1. Distended left abdomen
2. No longer grazing
3. A reluctance to move

4. Appear distressed – vocalise, eyes bulging
5. Strain to urinate and defecate
6. Rapid breathing – mouth may be open with tongue protruding
7. Staggering

In advanced cases the animal will go down. Death is rapid at this stage, and due to the swollen rumen compressing the lungs, interfering with breathing and tissue oxygenation, and obstructing blood flow.

### **Treating cattle**

**Early/mild cases** : Animals that are mildly affected can be treated orally with an anti-bloat preparation. After dosing, keep the animal moving to encourage the preparation to mix with the frothy rumen contents.

**Severe cases** : Animals that are severely bloated and distressed need rapid relief. This may be achieved by inserting a wide-bore trochar and cannula into the rumen high on the left flank (where the swelling is greatest). After gas and froth is released, an anti-bloat preparation is poured through the cannula into the rumen to help break down remaining froth/foam (dose according to label instructions – see ‘Always read the label’). In emergency situations, vegetable oil (250–500 mL) or paraffin oil (100–200 mL) has traditionally been used.

In most cases of frothy bloat, a trochar and cannula will not be adequate to relieve pressure, and a 10–20 cm incision will have to be made using a clean, sharp knife. It may be necessary to scoop the frothy material out of the rumen by hand. In these emergency cases there is usually no time to wait for a vet to arrive, so stock owners will have to do this themselves. Veterinary attention is necessary to irrigate the abdominal cavity, clean and stitch the wound and give antibiotic treatment to prevent serious infection.

### **Bloat in sheep**

Bloat does occur in sheep but is less severe than in cattle. Bloat in sheep often occurs with enterotoxaemia (pulpy kidney), so it is wise to vaccinate against clostridial disease (5-in-1) before sheep go out onto lush pasture or when bloat occurs in the flock.

### **Treating sheep**

Treatment for sheep is the same as for cattle. At present only Tympanyl TM is registered for use in sheep. Traditional treatments include drenching with 50–60 mL of vegetable oil or paraffin oil. An oil or surfactant anti-bloat preparation registered for cattle may be used under written veterinary recommendation, usually at one-fifth of the cattle dose. Because sheep are small, it is possible to sit them on their hindquarters and massage the rumen to mix the oil and encourage belching. Emergency incisions into the rumen are rarely necessary.