



CIRCULAR V-409 (Revised)



Ketosis in Dairy Cows

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. WHAT IS KETOSIS

Ketosis - known also as acetonemia - is a **metabolic** disease of dairy cattle; it is not infectious nor contagious. Ketosis is primarily a disease of high producing dairy cattle. It occurs in well conditioned or fat high producers the first six to seven weeks after calving, during the time of high levels of milk production. The highest incidence of ketosis takes place during the housing period, usually during winter months. It is seldom seen in pastured cows.

. WHAT CAUSES KETOSIS

4.3 Ketosis results from two factors: (a) **the blood sugar is lower than normal**, (b) **the blood ketones are higher than normal**. These two factors are inter-dependent. The blood sugar of the high producing dairy cow is drained by pregnancy, lactation, stress, cold weather. If the cow's diet is low in energy, the body fat is broken down rapidly to support energy needs for milk production. This rapid breakdown of body fat associated with low levels of blood sugar causes a build-up of fat breakdown products, collectively known as **ketones**. The body cannot 9 burn up or utilize these ketones because of the low 3x blood sugar. This combination - low sugar/high 409 ketones - causes the cow to get sick and show symptoms of ketosis.

Put in simple terms: if the high producing dairy cow is not fed properly, if its diet does not provide adequate levels of energy, ketosis is likely to occur.

. WHAT ARE THE SYMPTOMS OF KETOSIS

Two types of ketosis exist: (a) **primary** ketosis which is strictly an energy imbalance, and (b) **secondary** ketosis which is an energy imbalance caused by an underlying disease problem which affects the cow's health. These underlying problems include: hardware disease, displaced abomasum, uterine infections, and other diseases which adversely affect the food intake. Your veterinarian should examine the cow, decide if she has primary or secondary ketosis, and treat her accordingly.

The cow with primary ketosis (ketosis only with no other disease involved) usually lacks appetite, milk production is decreased and her feces are hard.

If the loss of appetite continues or increases in severity, the animal may become selective in eating, she may partially or completely ignore grain and, finally, pick at poor hay or straw bedding. Usually, she will lose weight very rapidly, become depressed and have a stiff wobbly walk. Constipation, with mucous-covered feces, followed by diarrhea, may be observed. A staring expression, a dull eye and partial blindness may result.

Occasionally, only weight loss and mild loss of appetite without decreased milk production may occur.

Nervous forms may result in which the animal becomes excitable, will constantly lick herself, walk in circles and have symptoms that generally appear much like rabies.

The experienced herdsman can detect the odor of ketones (acetone) from an infected animal when entering a closed barn. Tests are available that will detect ketones in the milk and urine of cows suspected of having ketosis.

. TREATMENT OF KETOSIS

Successful treatment requires accurate diagnosis of the problem. It is wise to seek veterinary assistance early, and determine if the cow has **primary** or **secondary** ketosis. If secondary ketosis is treated as one would treat primary ketosis the cow will seldom recover or she may even die.

The treatment of secondary ketosis requires correction of the underlying cause: hardware disease, displaced abomasum, or other conditions.

Primary ketosis responds quite well to administration of glucose in the vein, or administration of glycerol or propyleneglycol through the mouth. These treatments are usually supplemented by one intramuscular injection (10-20 mg) of dexamethasone.

Undoubtedly the emphasis should be on preventive measures.

. PREVENTION OF KETOSIS

No single set of recommendations will insure 100% freedom from ketosis. The following suggestions reflect the present state of the art in preventing primary ketosis:

- (a) Avoid having excessively fat cows at calving time.
- (b) Keep cows full of good quality roughage.
- (c) Avoid feeding poor quality grass silage or silage high in butyric acid.
- (d) Avoid abrupt changes in the type of roughage.
- (e) Bring cows up on full feed rapidly after calving.
- (f) Feed grain (concentrates) according to production.
- (g) Be sure that the ration contains adequate levels of protein, minerals, and vitamins. This can easily be achieved by providing good quality roughage, ordinary protein supplements, and trace mineral salt.
- (h) Follow general herd management practices which tend to increase the appetite and aid the comfort of the cow. This means a comfortable, well ventilated barn and adequate exercise for the cows.
- (i) Of the few suggested additives - such as mixed lactates and sodium propionate - the latter appears to be the most beneficial.