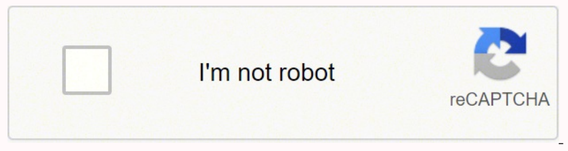


Next

# Ketosis in cattle pdf

| | Type I | Type II | T A |
|---|---|---|---|
| riod | 3 to 6 weeks after calving | 1 to 2 weeks after calving | |
| | Spontaneous, underfeeding | Fat cows, fatty liver | |
| | Very high | High | |
| e | Low | Low (may be high initially) | |
| | Low | Low (may be high initially) | |
| n | Probably thin | Often fat (or lost fat) | |
| A | Ketone bodies | Liver triglycerides initially, then ketone bodies | |
| nesis | High | Low | |
| gy | None | Fatty liver | |
| | None | Poor | |
| test | Post-fresh BHB | Pre-fresh NEFA | |
| on | Post-fresh management and nutrition | Pre-fresh management and nutrition | |

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RESEARCH ARTICLE
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## Prevalence of ketosis in dairy cows in milk shed areas of Odisha state, India

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### Abstract

**Aim:** The present study was conducted to ascertain the prevalence of ketosis in dairy cows in dairy herds, milksheds, and mixed population of milk cows selected randomly in milkshed areas of Odisha state, India.

**Materials and Methods:** The investigation was conducted in 280 private dairy herds with variable herd size of 10-15 cows comprising crossbred Jersey cows (CBJ), crossbred Holstein Friesian (CHF) cows, and indigenous local breeds. The analysis of urine (Rothera's test), milk (Ross test), and blood samples of 2760 test cows were conducted through qualitative assessment by Rothera's test and Ross test, respectively, for the presence of ketone bodies to screen the ketotic animals. Cut-points have been decided based on β-hydroxybutyric acid level (≥1.2-1.4 mmol/L) in milk.

**Results:** We noted positive cases of ketosis with a prevalence rate of 36.7% (1014/2760) entailing 27.2% in clinical ketosis and 9.6% in subclinical ketosis. The breed wise incident rate was recorded to be the highest (38.0%) in CBJs. The age-wise prevalence rate was found to be the highest (40.8%) in the age group of 5.5-6.5 years. The season wise prevalence rate in 5th calver was recorded to be the highest (38.6%) in summer season as compared to other seasons. The prevalence of ketosis was observed to be the highest at 56.7% on the first stage of lactation at the 1st month after 2 weeks. The incidence rates for clinical and subclinical ketosis were found to be 25.2%; 12.2%, 26.6%; 11.2% and 30.3%; 2.9% in CBJ, CHF and indigenous cows, respectively. The breed wise overall prevalence rate was recorded to be 38.0% in CBJ, 37.8% in CHF, and 33.2% in indigenous cows.

**Conclusion:** Ketosis and subclinical ketosis is highly prevalent metabolic disorder and has severe effect on the production status of affected animal and needs to be prevented, rather than treated, by maintaining cows in good and healthy conditions. We have attempted to give great attention for diagnosis, management, and control of this disease during risk stage to prevent economic loss sustained by the dairy farmers of Eastern India.

**Keywords:** age, breed, dairy, ketosis, lactation, milk cows, prevalence.

### Introduction

Ketosis is a production disease with high intensity of prolonged morbidity causing substantial loss in dairy industry [1,2]. Ketosis has become a very common metabolic disorder in modern dairy production by causing decrease in milk production and increase in prevalence and duration of fresh cow diseases, enhancing time to conception, and augmenting risk of culling. Numerous global studies have indicated that ketosis increases from a low prevalence at the first lactation to a peak level in the fourth lactation with great variation of cumulative lactational prevalence among dairy herds, averaging about 40.0% which can be as high as 80.0% in some herds [3-7].



Ketosis, a multi-factorial disorder of energy metabolism, leads to hypoglycemia and hyperketonemia. The prevalence rate is the highest during the period commencing at calving and extending until about peak lactation [2]. Production diseases are mainly man made problems, which occupy the most key place among the diseases of dairy animals as it directly or indirectly affects the economy of dairy farm and ultimately dairy farmers suffer from huge financial losses due to drastic decrease in milk production [8]. The clinical signs of ketosis often remain ill-understood by the farmers as well as the veterinarians, as a result, the true prevalence of ketosis remains underdiagnosed in the field condition. The prevalence of ketosis in most of the common management systems after calving has not been explored entailing high production loss to the dairy farmers [9].

Ketosis can be diagnosed by measuring ketone bodies present in urine, milk, and blood.

Because of the economic consequences, it is imperative to diagnose ketosis in dairy cows, particularly during early lactation for treatment in advance and prevention of further losses. In this study, attempts





## Treatment Plan:

- This plan is a good one, covering all the suitable evidence based options.
- Alternative options:
- Glucose 40% 400ml IV – doesn't last long. There may be a reduced insulin response in ketotic cows, so this isn't a great option.
- Insulin – reduced blood glucose, powerful antiketogenic, but poor response in cattle and not available/licensed.
- Niacin – antipolytic, increases blood glucose and insulin, but uncertain mechanism and clinical value.
- Bovine Somatotrophin – modifies IGF-1 levels? Evidence sparse.

Agriculture Notes

# Acetonaemia (Ketosis) of Dairy Cows

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*Nicky Stone, Ballarat*

***A very distinct problem for dairy cows is the disease of ketosis (or acetonaemia). The occurrence of this disease in dairy cows is related to an increased demand for glucose by the animal. Ketosis also occurs in other animals and the problem is known by various names, eg. pregnancy toxaemia in ewes.***

Most commonly, ketosis is seen either in high producing cows or cows on a poor diet. Signs of the disease can be seen before calving, but they occur most commonly in the first month after calving and occasionally in the second month. In a herd, ketosis can either be sporadic with only individuals affected, or endemic with many cows affected over a period.

## Cause

The disease is an extension of a normal metabolic process that occurs in most heavily producing dairy cows. The basic problem in ketosis is a deficiency of glucose (or sugar) in the blood and body tissues. Glucose is produced by the cow from carbohydrates which are a major constituent of pastures and other supplementary feeds in varying degrees.

In late pregnancy, glucose is directed from normal bodily functions to the nutrition of the developing calf. As lactation starts, glucose is essential for the formation of lactose (milk sugar) and milk fat. The requirement for glucose is at such high levels that the blood becomes low in glucose (hypoglycaemia). Fifty grams of glucose is required for each litre of milk with a 4.8% lactose test and 30 grams for each litre of milk with a 4% fat test.

Cows (and other ruminants) cannot be fed glucose in their diet; it has to be made in the rumen from suitable carbohydrates in the diet.

If the amount of suitable carbohydrate in the diet is not enough to meet the glucose needs of the cow in full milk, the liver starts to manufacture glucose from other basic compounds in the body - usually fat reserves.

Unfortunately the increased production by the liver also gives rise to undesirable by-products called ketones. These, together with the lack of blood sugar, cause the signs seen with the disease.

Primary ketosis, as described, occurs when high producing cows simply cannot eat enough carbohydrate to satisfy their glucose needs, or where the feed available is somewhat deficient in carbohydrate.

A secondary ketosis can also occur when a primary problem or disease causes an upset in the digestion or metabolism of carbohydrate by the cow. This can occur even though the amount of carbohydrate eaten seems adequate for normal body functions. The primary diseases involved in this type of ketosis include displacement of the fourth stomach, peritonitis, mastitis, metritis, milk fever, or any problem reducing the cow's appetite for a length of time.

## Signs

The two major forms of ketosis occurring in dairy cattle are the wasting and nervous forms. The wasting form is much more common.

### *(1) Wasting form of ketosis*

Initially there may be a gradual decline in appetite over two to five days. Often the appetite is lost in an unusual manner and the cow may eat grass and hay but will not eat grain or silage. The appetite may appear depraved, with cows eating any objects, including dirt and stones. Consequently, milk yield falls quickly to a fraction of its initial level, but never ceases completely. By this stage the affected animal is obviously ill and is disinclined to move, may be staggery or unsteady on its legs, and the head is often carried low to the ground.

Temperature, pulse, and respiration rates of the cow remain fairly normal as the animal loses weight. The coat is described as having a "woody" appearance, presumably due to the loss of fat reserves under the skin.

The ketones produced by the cow in this disease have a characteristic sweet "sickly" smell, which may be detected on the cow's breath and less commonly in milk samples. Very few affected animals die but, without treatment, recovery is slow with milk yields gradually improving over one month but never fully returning to normal levels.

This form can be very mild, the only clue to its presence being a small reduction in milk production.

Victoria
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Ketosis in cattle treatment. Ketosis in cattle prevention. Ketosis in cattle pdf. Ketosis in cattle ppt. Ketosis in cattle meaning. Ketosis in cattle in hindi. Ketosis in cattle wikipedia. Ketosis in cattle causes.

The pathoge of bovine ketosis is incompletely understood; However, it requires the combination of an intense adipose mobilization and a high demand for glucose. Both conditions are present in early breastfeeding, at which time the negative energy balance leads to adipose mobilization, and the synthesis of milk creates a high demand for glucose. Adipose mobilization is accompanied by high concentrations of non-corresponding fatty acids (nefaries). During the periods of intense gluconeogenesis, a large part of the silic neks is directed to the body synthesis of ketone in the Hyd. Therefore, the clinicopathological characterization of ketosis includes high syllable concentrations of cetone nefaries and bodies and low glucose concentrations. In contrast to many other species, livestock with hypergetonemia has no concurrent acidity. Sésica ketone bodies are acetone, acetoacetate and beta-hydroxybutyrate (BHB). It is believed that the pathogeis of ketosis cases that occurs in the postpartum period immediately differs from that of cases approaching at the time of maximum milk production. Cases of ketosis that occur near the maximum milk production time (usually around 4, 6 weeks after delivery), is sometimes described as ketosis type I. The ketosis at this time may be Associated with a rare livestock that experiences a metabolic scarcity of gluconeogenic precursors than with excessive fat mobilization. The exact pathogeis of the clinical signs is not known. They do not seem to be directly associated with iconic concentrations of glucose bodies or ketone. They may be due to the metabolites of the bodies of ketone. The concentrations> 1.0 mmol / L (10.4 mg / dl) or 1.4 mmol / L (14.6 mg / dl) Blood or serum BHB are considered diagnosis of subclinical ketosis. The standard threshold used for blood is 1.2 / L (12.5 mg / dl), corresponding to the thresholds of 100 mcmol / L for milk, and 15 mg / dl (or "small" in a pressure rod) for urine. Since ketosis is an expensive disease and that treatment is effective, on the farm. farm. The programs are profitable for the largest number of farms with moderate to higher prevalence. Two results of the monitoring programs are the treatment of individual cows cetÃ ³ and the evaluation ³ prevalence to determine the effectiveness of the prevention strategies ³ the level of herd. The sudden ³ or prolonged elevation in the prevalence of ketosis ketosis indicates a problem of manual level and should cause a review ³ the nutritional management ³ cow. Some farms use hand-held BHB meters to test all cows in early lactation. Cows with sole subclusal ketosis are treated with oral propylene glycol soaking. This approach is labor-intensive, but has been shown to reduce the greater occurrence of the disease in subclad cetÃ ³ ticos animals and to improve milk production ³ treated animals. Nutritional management³ procedures are also ³ important. Routine milk ketone body tests are available in some countries of the Herd Dairy's improvement compas. These tests can be used to classify herd risk before considering farm testing programs, or as the only source of monitoring in flocks with a very low prevalence (ketosis in dairy cows is a metabÃ ³lic disorder that usually occurs within two weeks after calving. After calving, the demand for milk production ³ substantially increased, and cows cannot consume adequate energy to maintain yield, which makes it in a negative energy balance. As a result, cows mobilize body fat to maintain energy for milk production ³ publish. calving recovery³ which increases the blood levels of non-esterified fatty acids (Nefas) and lowers the body³condition (BCS) score³ When the Nefas overwhelm the Hungarian's ability to an excessive load of ketone bodies (partially oxidized fatty acids) will result, which can ultimately lead to ketosis. Excessive swelling ³ around the point of delivery may increase the risk of ketosis. Learn more: Nutrition requirements ³ the transiciÃ ³ n CETOSI CLÃ TICO S In dairy cows may have a negative impact on the maximum yield of milk. If cows have a lower milk. lower. At its maximum point, it will have a negative impact on total milk production in all breastfeeding. The ketosis can also affect the intake of dry matter, which increases the BCS loss rate and will have a negative impact on reproductive performance. They were demonstrated that the cows that lost 0.5 to 1 point of BC within the first five weeks after delivery were open 16 days more compared to the cows that lost less than 0.5 acs five weeks after the Birth. How to detect ketosis in its battle cows Lattages the symptoms of ketosis in dairy cows are easy to detect without performing tests when severe and cow shows clinical signs. In severe cases, cows can have a lethargic aspect. They will leave feed and lose the body condition in a short period of time due to the mobilization of body fat to compensate for negative energy balance. Losing a full-body condition punctuation in the first 30 days of milk is unacceptable. The excessive brow of BCS, especially in the first 30 days of milk, is an indicator of a serious negative energy balance. Cows that lose a significant body condition during the first 30 days of milk will take longer to get pregnant and have less persistent lactations. The significant loss of body condition during the first 30 days of milk can also have a negative impact on the quality of the milk due to a greater inability for a cow to combat intramamary infection. The subclinical state is more frequent in early lactation cows and can be detected by blood or milk ketone tests. To capture ketosis before it becomes clinical, the reading operations have been performing routine blood analysis as part of its fresh vacuum detection protocol. These blood analysis detect high levels of in blood indicative of subclinical ketosis in dairy cows. Ketones appear in a cow’s blood when there is a glucose (energy) deficiency. Proper management to control ketosis in dairy cows, while some nutritional factors may play a role in controlling the negative impacts of ketosis in dairy cows, management is key. In fact, some cows may High levels of ketones and still are done if handled correctly. The following management practices can help you control the negative consequences of ketosis on your dairy operation: 1. Avoid overcrowding in your transit cow facilities. As dairies become larger, there is often a tendency to overcrowding, especially during times when there is relief from childbirth. Dairy producers may have adjusted their facilities as their dairy herd has expanded, but many have not yet adjusted their transitional cow facilities to match the size of their herd. Overcrowding can reduce feed intake by adding stress and physically limiting the amount of feed bed space available to each cow. Finally, overcrowding negatively affects lying time, which increases the risk of developing hoof injuries within the first 100 days in milk. 2. Do not mix cows and heifers. Heifers will be more stressed when mixing with older cows. This can also cause a reduction in dry matter intake and contributes even more to a negative energy balance. 3. Reduce the number of lupe movements. There is a social hierarchy in dairy herds, and moving a cow to a new feather with cows you are unfamiliar can add extra stress. Try to move the cows as a group so they can be with other cows they are familiar with. 4. Monitor body condition scores in late lactating cows. Group body condition scores should be monitored in the last trimester of lactation and corrected before cows enter the dry cow pen. Once they are in the dry pen, it will be difficult to correct the score of your body condition without increasing the risk of of the transitional cow ³ n. Performance Tracking Minerals: part of a program for the mitigation ³ ketosis as mentioned above, inflammation, whether ³ mastitis, lameness or other health events, consume glucose and lead to ketosis in dairy cows, especially in cows that have recently been knocked down and are already dealing with a ³ reduction in dry matter intake. If you can control the inflammation³ you control ketosis. More information³ Trace Reproductive Tract Inflammation Yield minerals provide a more robust immune response during labor and during ³, helping to improve the inflammatory response of a cow's and reducing the incidence and severity of ketosis. Zinc is important for improving intestinal integrity. The intestine is responsible for 70% of the immune function ³ an animal Â Â . Manganese is important for gluconeogenesis and plays a role in the reabsorption ³ calcium, while copper is important for immune function³ Cobalt plays a role in the production ³ vitamin B-12, which is essential for gluconeogenesis. Chromium, in markets where it is approved, is important for numerous functions, including glucose metabolism and insulin activity. AvailaÂ® Dairy, AvailaÂ® Se*, and MICROPLEXÂ®* contain trace minerals of performance that help control inflammation ³ mitigate the impact of ketosis on lethal operations. In addition to including Zinpro Performance MineralsÂ® in their ³ cow diets, dairy farmers must implement a fresh cow monitoring strategy with their veterinarian. Make sure you are covering all the transition issues ³ n and that all your prevention measures ³ in place. Dairy farmers should also consider auditing their handling of cows in transition³ n. Look at the feeding space³ the group changes, the comfort of the cow, the ³ of heat and its nipple cutting protocol before drying. Visit the Dairyland Online Initiative for more tips on handling transitional cow facilities³ clustering strategies, and managing dry cows. For more information ³ on the inclusion ³ performance trace minerals in your transitional cow nutrition plan³ please³ contact your Zinpro representative today. *All They are not available in all markets. Markets Markets Shop Jeffers Livestock's wide selection of cattle meds, vaccines, antibiotics and other medical supplies and cattle products. Satisfaction guaranteed. Bimectin Injection contains 1% ivermectin for internal and external parasite control in cattle and swine. Highly effective for treatment and control of roundworms, lungworms, grubs, lice, and mange mites. Cattle dosage: 1 ml SQ per 110 lbs. of body weight. Swine dosage: 1 ml SQ per 75 lbs. of body weight. Request Additional Information Min side | RiksTV Bimectin Injection contains 1% ivermectin for internal and external parasite control in cattle and swine. Highly effective for treatment and control of roundworms, lungworms, grubs, lice, and mange mites. Cattle dosage: 1 ml SQ per 110 lbs. of body weight. Swine dosage: 1 ml SQ per 75 lbs. of body weight. Request Additional Information • Included in the Science Citation Index Expanded (SCI-E) since 1996 • Published 6 times a year • Free submission and publication • Open access