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Short Communication

Prevalence of Subclinical Ketosis in Early Postpartum Milch Cows in Coimbatore District

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Abstract

The present study aimed to study the prevalence of subclinical ketosis in the Coimbatore district of Tamil Nadu. The TANUVAS Ketoquant kit was used to screen the subclinical ketosis in high-yielding cows in the early lactation period. A total of 100 milk samples were collected and screened in a front-line demonstration study and the prevalence of subclinical ketosis was recorded. Clinical signs and farmers' awareness levels about subclinical ketosis were also recorded. The prevalence of subclinical ketosis was 12 percent. High prevalence was observed during the second month of lactation (58.33 %) followed by the first month of lactation (33.33 %). From September to December, the prevalence was high (41.67 %). Lack of awareness on scientific feeding management and farm-level diagnosis of subclinical ketosis. Subclinical ketosis causes severe economic impacts on production and profit in farms, it is very important for early diagnosis and treatment of subclinical ketosis in dairy cows especially during early lactation.

Keywords: β-hydroxybutyrate, Ketosis, Metabolic Disorder, Milk, TANUVAS Ketoquant.

Introduction

Subclinical ketosis (SCK) is important metabolic disorders in dairy cows (McArt *et al*., 2015). Subclinical ketosis increases the risk of clinical ketosis (Seifi *et al*., 2011) and other disorders, like displaced abomasum, metritis, and lameness (Suthar *et al*., 2013). Production diseases i.e. diseases associated with improper nutrition or management are common in dairy cows. Dairy cows suffer from negative energy balance (NEB) during the first week of lactation due to energy expenditure associated with milk production and limited feed intake, resulting in NEB (Djokovic *et al*., 2019). It causes greater losses than clinical ketosis because it occurs more frequently and often cannot be detected by farmers (Brunner, *et al.*, 2019). Subclinical ketosis is mostly observed during early lactation and can be diagnosed based on elevated ketone bodies in body fluids (blood, milk, urine) in the absence of clinical signs (Andersson, 1988). Unlike milk fever and mastitis, which exhibit clear clinical symptoms and can be treated during the incubation period, ketosis is often challenging to detect early due to a lack of awareness among farmers. In subclinical ketosis, animals display signs such as dry faeces, weight loss, reduced rumination, decreased milk production, impaired reproductive performance, mastitis, and increased susceptibility to other ailments like fatty liver, displaced abomasum, and metritis (Suthar *et al*.,2013). Diagnosis of bovine ketosis at an early (subclinical) stage is a must to prevent economic loss to the farmers in terms of reduced milk yield. The β-hydroxybutyrate concentration in blood (bBHB) is an indicator used for diagnosing subclinical ketosis in dairy cows. Milk is a very suitable sample for the determination of ketosis as it can easily be collected by farm personnel compared to blood and urine samples. In cases of SCK, the content of BHB in milk is increased but concentrations are lower than in the blood (Samiei *et al*., 2010). Therefore, the detection of ketosis at the subclinical stage is important to minimize the losses and maintain the good health of lactating cows.

Material and Methods

A total number of 100 milk samples were collected from Holstein Friesian crossbred high-yielding dairy cows that were in early lactation, weak and emaciated body condition from the Coimbatore district randomly for screening of subclinical ketosis using TANUVAS Ketoquant Test kit. Front-line demonstration on screening for subclinical ketosis in dairy cows using the TANUVAS Ketoquant test kit was conducted at selected farm levels. A total of 90 farmers participated in the front-line demonstrations. Milk samples were collected and screening was carried out as per the procedure given by the TANUVAS Ketoquant test kit. The development of the purple colour was graded. The gradation of colour index was taken for assessment of subclinical cases.

Results and Discussion

Subclinical ketosis in dairy cows is an economically important condition in dairy cattle and contributes to substantial losses to the farmers due to reduced milk production and impaired reproductive performance. Out of 100 dairy cows screened for subclinical ketosis, 12 dairy cows (12%) were positive for subclinical ketosis and 88 dairy cows (88%) were negative. The prevalence of subclinical ketosis in this study is in agreement with previous findings of (Bihani, 2001; Sharma, 2006; Sahoo *et al*., 2009; Thirunavukkarasu et al. (2010) Biswal *et al*., 2016) who reported an overall prevalence of 12.50, 9.90, 10.20, 9.38 to 11.42% and 9.6 percent, respectively. Whereas Yameogo *et al*., (2008) recorded low incidence rates of 4.40 and 6.43 percent and Pourjafar and Heidari, (2003) recorded a higher incidence of 38 percent, respectively in ketotic cows. The prevalence can vary depending on the season, breed, management practices, and feeding pattern followed by the farm. This prevalence might be due to prevailing feeding practices by the farmers and less awareness about the availability of cow-side test kits for screening subclinical ketosis at the farm level. Creating awareness and capacity building on scientific feeding management is important. Affected animals showed reduced feed intake, pellety dung, and decreased milk yield. Similar clinical symptoms were observed by Seifi *et al*., 2021). These observations revealed that the animal was undergoing a metabolic disorder, but they did not exhibit any significant clinical signs, which can be easily recognized by the farmers.

In this study, the prevalence of subclinical ketosis during the second month of lactation was high (58.33 %) followed by the first month of lactation (33.33 %). These results suggested that the maximum number of subclinical ketosis occurred during the first two months of months of lactation. This is per the findings of Sharma, (2006); and Nazeer *et al*., (2019). The lactating cows are in peak milk production and maximum physiological stress due to post-parturient depletion of body reserves and lactational stress due to high milk production. In our study, the high prevalence was observed during September to December (41.67%) followed by January to February (33.33%), March to April (16.66%), and only 8.3% cases during May to June. Similarly, Chakrabarti (1993) observed the

highest incidence of ketosis from September to December month of the year. Subclinical ketosis economically important metabolic disorder in high yielding cows. Prevention of the occurrence of subclinical ketosis is more important than the treatment of animals. Management of high-yielding cows with proper balanced nutrition, regular inclusion of feed additives, and enhancing the farmers' knowledge about prevention and early detection of subclinical ketosis will help to improve the farm income.

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Contribution by Authors

Equal contribution. All authors declared that 'written informed' consent was obtained from the approved parties for the publication of this article and accompanying images.

Conflict of Interests

There is no conflict of interest.

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