

PREVALENCE OF SUBCLINICAL HYPOCALCAEMIA AND SUBCLINICAL KETOSIS IN BUFFALOES

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ABSTRACT

The present study was undertaken to study the prevalence of subclinical hypocalcaemia and subclinical ketosis in buffaloes. Out of 166 buffaloes screened, 61 (36.75%) and 42 (25.30%) buffaloes were found to be positive for SCH and SCK, respectively. Month wise analysis revealed higher prevalence of SCH and SCK in October and November, respectively (i.e., rainy season and winter season) while the lowest was recorded in the months of May and June for SCH and for SCK (i.e., April, May and June: the summer season). Lactation wise highest prevalence was recorded in third and fourth lactations for SCH and SCK respectively, while buffaloes in first parity were least affected by the two conditions. The prevalence of both conditions was higher in organised dairy farms than the unorganised dairy units. Of the diagnostic tests utilised for SCH, estimation of serum calcium levels was found superior to the Sulkowitch test while for SCK, estimation of blood ketones was found superior to Rothera's test and the urine dip stick test.

Keywords: prevalence, subclinical hypocalcaemia, subclinical ketosis

INTRODUCTION

Subclinical hypocalcaemia is a condition in which there are no evident clinical signs but mild inappetence, hypogalactia (Samad, 1999) and reduced smooth muscle function (Houe *et al.*, 2001). Subclinical ketosis was defined as elevated concentrations of circulating ketone bodies without exhibiting clinical signs (Anderson, 1988). Occurrence of these conditions is common during early part of lactation especially within first two months (Huber *et al.*, 1981; Grohn *et al.*, 1983 and Marjan and Saman, 2011). Their diagnosis is difficult under farm conditions and if left unnoticed will result in huge economic losses to the farmer (David, 1982). The present study was undertaken to determine the prevalence of subclinical hypocalcaemia and subclinical ketosis in buffaloes in and around Gannavaram.

MATERIALS AND METHODS

Buffaloes within the first two months of parturition, with symptoms of hypogalactia, inappetence and no rise in temperature presented to the teaching veterinary clinical complex at Gannavaram, private dairy farms and veterinary dispensaries in and around Gannavaram were

selected for the study. The study period was from September 2010 to August 2011. The procedure included collection of history in relation to number of lactation, season, month and type of dairy sector. Diagnosis of SCH was done by utilising the urine Sulkowitch test and estimation of serum calcium level while for SCK Rothera's test, urine dipsticks and blood ketone level were employed.

RESULTS

Out of 166 buffaloes screened 61 (36.75%) and 42 (25.30%) were found to be positive for SCH and SCK, respectively. The overall prevalence of SCH in the present study was lower when compared with the earlier reports of Oetzel (1996) and Goff (2008) who reported an incidence of 39 and 50 percent, respectively. which might be due to good quality fodder and rations along with high awareness of the owners about the metabolic disorders. The present findings of SCK are in partial accordance with those of Emery *et al.* (1964), Kauppinen (1983) and Anantwar and Singh (1994) who reported prevalences of 50, 34 and 66 percent, respectively. The lower prevalence of SCK in the current study can be attributed to the better managerial practices and nutritional supplement when compared with those of earlier reports. The prevalence of SCK in the present findings was higher when compared to the reports made by Dohoo *et al.* (1983) (9.6%) and Lindstrom *et al.* (1984) (11.5%). These reports indicate their better managerial practices compared to those in the current study.

In relation to month, the highest and lowest prevalence of SCH were recorded during October (19.67%) and May and June (1.64%) whereas for SCK, the highest prevalence was recorded during

November (16.67%) while the lowest prevalence was in the months of April, May and June (2.39%), respectively. The highest prevalences of SCH and SCK were noticed during rainy season (57.38% and 54.76%) followed by winter season (32.78% and 33.33%) while the lowest was recorded in the summer season (9.94% and 11.91%) respectively. That the highest prevalences of SCH and SCK were recorded during the months of October and November might be due to reasons like the greater number of calvings that occur in these months and also attainment of peak lactation stage by animals that were calved 6-8 weeks earlier and so became more susceptible for these conditions. The lowest incidence of these conditions in the months of April, May and June can be attributed to the decreased number of calvings and also less productivity of the buffaloes during this period.

Buffaloes in their third lactation (36.07%) were most affected by SCH followed by those in their fourth (34.42%), and second (19.67%) with a lower prevalence (9.84%) among those in their first lactation. In relation to lactation, SCK was recorded highest during the fourth lactation (33.33%) followed by the third (30.95%), the second (26.19%) with the lowest prevalence evident during first lactation (9.52%). The reason for the highest percent prevalence of SCH and SCK in the third and fourth lactations might be due to the fact that the animals in their third and fourth lactations might have attained their maximum productivity as determined genetically and were unable to withstand the pressures arising from high nutrition demands and thus were more prone to production diseases (Thirunavukkarasu *et al.*, 2010). Moreover, as the age of the animal increases, its adaptability by calcium homeostatic mechanism decreases leading to increased prevalence of subclinical hypocalcaemia. The

results were in agreement with Timothy *et al.* (2011). Among the known positives with SCH and SCK buffaloes in organised dairy units (57.38% and 59.52%) were more affected when compared with the unorganised sector (42.62% and 40.48%). The higher prevalence in well-organised dairy farms can be attributed to the selection of animals having very high genetic potentials regarding their productivity when compared with the unorganised dairy units. The lower prevalence recorded in unorganised dairy animals could be attributed to the presence of nondescriptive /native breeds with lower production potential.

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