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Studies on the Effect of Molasses Mixed Starter Ration on the Growth Performance of Crossbred Calves

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ABSTRACT

To prepare molasses mixed starter ration prepare 100 kg calf starter following feeds and supplements were available (i) Crushed Barley (ii) Sesame cake (iii) DORB (iv) Meat meal (v) Min. mixture (vi) Molasses (vii) Vit. AB2D3 (viii) Salt (ix) TM-5/ other feed antibiotic/ prebiotic. Molasses is a common ingredient in texturized calf starters. It is added for palatability and reduction of dust. Unfortunately, molasses brings some challenges to the manufacturing process because of its viscosity and at the farm because it attracts flies and increases the possibility for mold growth on starter.Flies and molds are not considered an issue during the winter, but if too much molasses is added, particles agglomerate into "starter rocks" under freezing temperatures, making starter hard to feed. However, all of these issues would be manageable if outweighed by the benefits of feeding more molasses to the calf. The reason for the positive impact on intake could be because the starters were more of a mash rather than texturized; ground corn, crushed oats and soybean meal made the bulk of them, thus molasses would have reduced dust and increased palatability. The digestive system of young calves does not have the capacity to digest the predominant sugar in molasses (sucrose), so if molasses bypasses rumen fermentation, its sugar wouldn't be digested. Instead, it would be fermented in the intestine, which could result in scours. Therefore it seems that molasses levels higher than 8 percent in starter would increase scouring in calves. Molasses does reduce dust in starter, which is positive for increasing starter intake; however, it appears that too much molasses reduces starter intake, bodyweight gain and may increase scours. When molasses is added at a low level, starter does not attract as many flies, mold growth in the summer is less and starter is easier to feed in the winter. So adding molasses to texturized calf starter may be worth the effort, but keep inclusion under 6 percent.

Keywords : molasses, starter, ration, calves, crossbred, growth, feed, supplements, texturized, flies, molds

I. INTRODUCTION

In India, dairy farming has become one of the major sources of income, providing employment for a significant number of rural families. India is not only the largest milk producer, but also is one of the fastest growing and lowest cost milk producers in the world. Chronic shortage of good quality feeds and fodders and dependency on crop residues as feed resources leads to lower productivity dairy animals in the country . Deficient supply of dietary protein results in low rates of reproduction and poor production as well as increased susceptibility to various diseases . Availability of oil cakes as a protein supplement in developing countries is very poor and at a very high price, this has led to use non-protein nitrogen source as urea, to compensate the nitrogen deficiency of fibrous feeds . Thus, enhancing intake, digestibility and availability of nutrients from poor quality roughages are only possible through optimization of rumen fermentation . Urea in combination with a readily available energy source (such as molasses) was found promising when either fed with or sprayed over poor quality roughages, or used as a ureamolasses supplement[1,2] . Molasses based liquid supplements have been used as a source of non-protein nitrogen, energy, minerals and vitamins for dairy cows. Liquid feed supplements offer an alternative delivery vehicle for supplemental fat, protein, and rumen-fermentable carbohydrates, minerals and vitamins in rations for lactating dairy cows . Molasses based liquid feed supplements can be used as a source to provide non-protein nitrogen, energy, minerals and vitamins for dairy cows. However, little research has been done on molasses based liquid supplements for improving the performance of dairy cattle. Therefore, an attempt was made to evaluate the effect of feeding molasses based starter ration on growth performance in crossbred calves.[3,4]

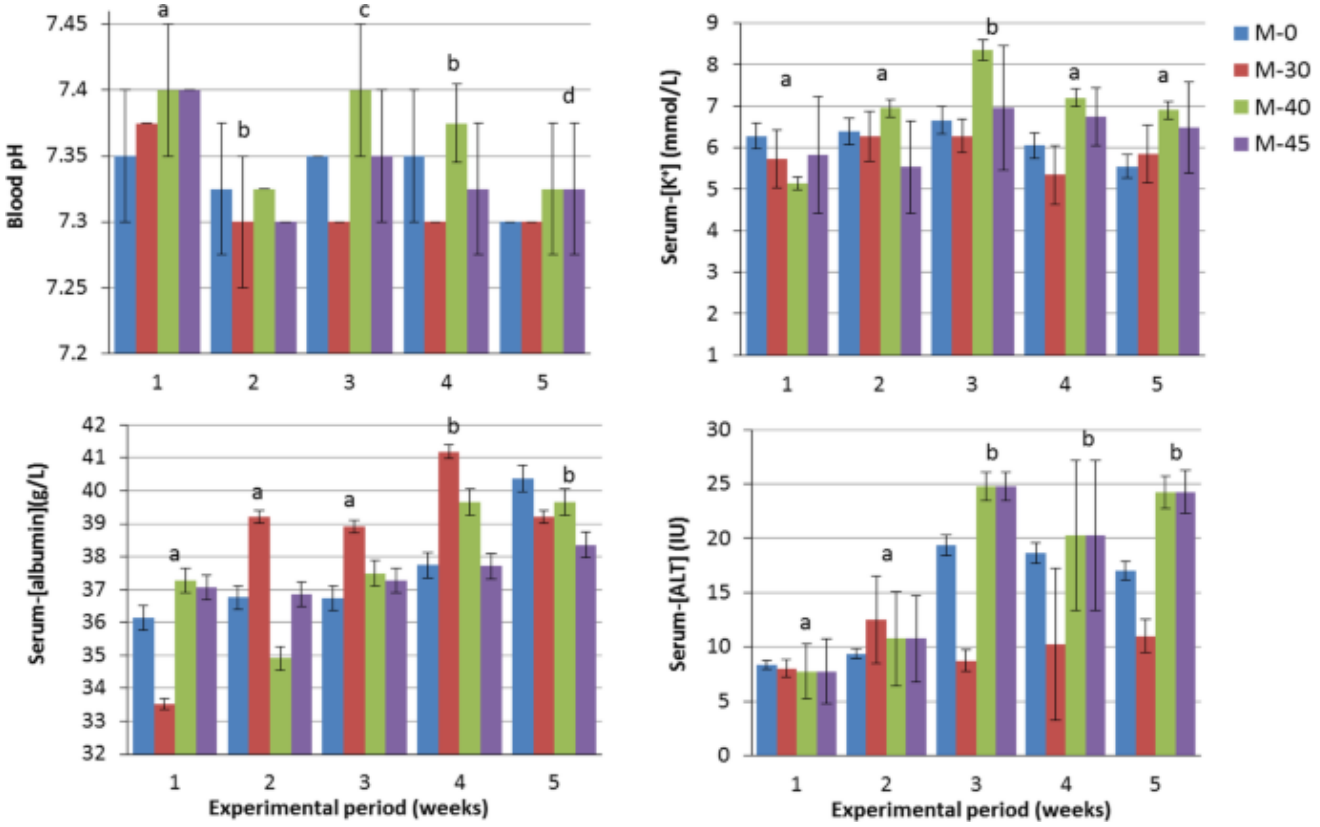
Dairy calves

II. DISCUSSIONS

Molasses is a potential energy supplement; extensively used to improve growth performance, milk and meat characteristics in dairy calves at relatively low concentrations of 5–40% of the diet. Few data are available concerning feeding molasses to calves; therefore, the current study aimed to investigate the effects of dietary supplementation with higher concentrations of molasses on growth performance, blood metabolites and rumen fermentation indices. Dietary supplementation with molasses at a concentration of 30% for 3 weeks improved growth performance, protein metabolism and rumen fermentation without compromising animal health, immunity, and electrolytes and acid-base homeostasis.[5,6]

Increasing demands for energy and protein by productive ruminants increased the importance of molasses as an energy supplement with a concentrated source of fermentable sugars and low protein content . [9,10] Molasses is extensively used in livestock feeding to improve palatability and to reduce dustiness . Furthermore, molasses has been used for a long time as a carrier for urea and mineral supplements to provide a slow, continuous intake of nutrients required for an optimum environment for microbial fermentation [13, 14]. Therefore, valuable research has been conducted on feeding molasses to dairy calves. Consequently, the current study hypothesized that further increase in the concentration of molasses supplementation might result in a better performance of dairy calves without compromising their health status. Therefore, the present study aimed to evaluate the effects of dietary supplementation with higher concentrations of molasses on growth performance, blood metabolites and rumen fermentation of dairy calves reared in India.[7,8]

III. RESULTS



Effect of dietary supplementation with different supplementation of molasses for dairy calves

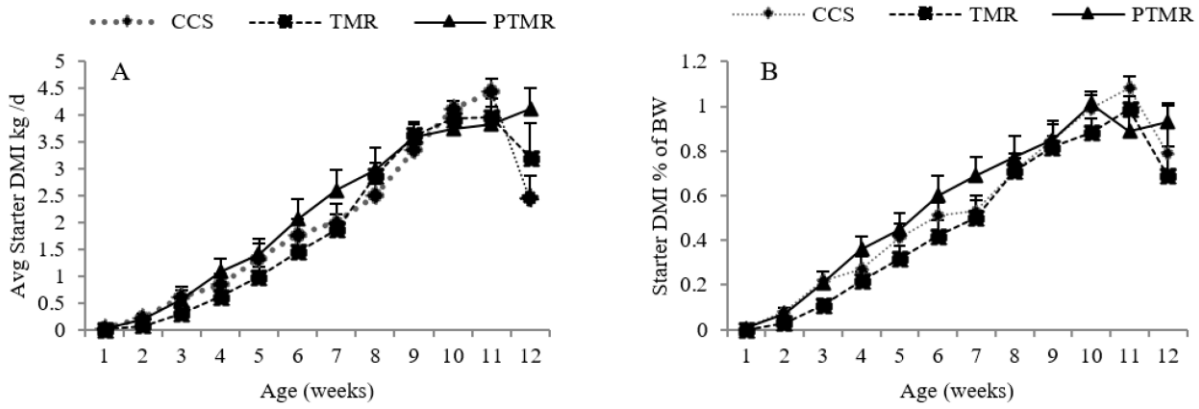
Dietary intake- The average daily molasses mixed ration intake was 5.66±1.18 and 6.10±0.99 kg in group A and group B, respectively (p0.01) in average daily dry matter intake in calves fed ration.[21,22]

Changes in body weight of calves (Kg): The average final body weight for group A and group B were 132.6 ± 11.96 and 113 ± 8.19 kg, respectively (p>0.05). The body weight gain per day for both groups were 0.36±0.05 and 0.40±0.05 kg, respectively (p>0.05) . The calves fed with supplementing molasses urea diet and found live wt. gains were 212.77 ± 28.6g, 341.3±35.5g and 354.7±35.2g .[11,12]

Changes in heart girth of calves (cm): The average final heart girth was 119.73± 5.14 and 113.83± 2.86 cm for group A and group B, respectively (p>0.05). The heart girth gain per day in group A and group B were 0.24±0.02 and 0.30±0.03 cm, respectively (p>0.05) . About 50% of the total gain in heart girth occurs during the first 6 months, 25% from 7-12 months and the remaining 25% during the last 12 months and the age of the experimental animal (group A Cow calf and group B Buffalo calf) were 1 year 8 months and 1year 8.5 months, respectively. It assumes that the skeleton of heart frame also may complete or near to complete its growth within this age limit as because the correlation between height and body weight is 0.97 . [19,20]

Changes in wither height of calves (cm): The average final wither height in group A and group B were 47.17±2.03 and 43.20±2.75 cm, respectively (p>0.05). Wither height gain per day was 0.075 ± 0.005 and 0.059 ± 0.005 cm in group A and B, respectively.[15,16]

Changes in body length of calves (cm): The average final body length of group A and group B were 113.6±7.34 and 110.93 ± 8.06 cm, respectively (p>0.05). Body length gain per day for group A and group B were 0.31±0.03 and 0.36±0.04 cm, respectively (p>0.05) The average daily length increment were 0.07, 0.08 and 0.07 cm for group A, B and C respectively. The daily increment in B group was higher than that of calves in group in A and C may due to intake of treated straw.[17,18]



IV. Conclusions

These results support the earlier findings by molasses mixed starter ration supplements. Calf growth performance responses, as measured by the added gain realized by this supplementation, are highly variable and cannot always be described by amounts of such feed consumed. This variability has large and direct impacts on the cost effectiveness of the management system. In our studies, using molasses-based ration supplements, we realized the costs associated with feeding equipment and labor. Although this value may appear cost-effective growing calves. [23,24]

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