CHAPTER V

SUMMARY AND CONCLUSION

The Indian dairy industry is based primarily on buffalo which contributes maximum total milk production to the country. They are preferred over cattle due to their inherited qualities such as resistance to disease, better feed conversion ratio, milk quality, adaptation to adverse conditions. However, the incidence of prolonged postpartum anestrus and delayed puberty are very high in buffaloes which cause great economic loss to the farmer and are the major obstacles in rearing this species. Although many factors affect postpartum acyclicity and anestrus, nutrition is the major factor influencing the resumption of postpartum ovarian cycles. Hence, feeding strategies are needed which can modulate/partition the available energy to improve postpartum reproductive efficiency of ruminants.

Propionate is the major gluconeogenic precursor in ruminants. Propionic acid thus may also be used to reduce the NEB due to calving and lactation. The effect of propionate on hepatic glucose production may be influenced by the glucose requirement of the animal. Hence the present study was undertaken to study the (1) Effect of peripartum supplementary feeding on postpartum reproduction of buffaloes and (2) Effect of peripartum supplementary feeding of the dam on certain reproductive parameters of their calves.

The study was conducted in twenty five buffaloes, divided into two groups. Group 1 comprised of 10 buffaloes was kept as control group and fed on routine diet comprising of green fodder and concentrate mixture. Group 2 comprised of 15 buffaloes was kept as treatment and was supplemented with Nutrocal®, a glucogenic precursor @ of 50 gram per animal per day starting from two months before expected date of calving till two months postpartum in addition to routine feeding.
Variation in the body condition score, body weight, certain biochemical parameters, and milk composition related to physiology of estrus and affecting postpartum reproduction following glucogenic precursor was recorded. There was no significant difference (p<0.05) in BCS at two months prepartum and at day of parturition but significantly different (p<0.05) at one month prepartum, one month and two months postpartum. The body condition gain till parturition was higher in supplemented as compared to unsupplemented buffaloes and the postpartum body condition loss was lower in supplemented as compared to unsupplemented group which is in collaborate with the findings of body weight in which the average gain in body weight till parturition was higher in supplemented buffaloes as compared to unsupplemented buffaloes. The average loss in body weight postpartum was lower in supplemented as compared to unsupplemented buffaloes. There was non-significant different (p>0.05) in body weight of the buffaloes at two months prepartum and differed significantly (p<0.05) at one month prepartum, day of parturition, one month and two months postpartum. Change in back fat thickness (BFT) was found to be significantly different (p<0.05) between the supplemented groups and the unsupplemented group.

Plasma glucose concentrations were non-significantly (p>0.05) higher in supplemented buffaloes compared to unsupplemented buffaloes which reflected the better energy utilisation in supplemented buffaloes. Plasma free fatty acids concentrations were non-significantly (p>0.05) lower in supplemented buffaloes as compared to unsupplemented ones. The lower level of FFAs in supplemented as compared to unsupplemented buffaloes indicated that there was less mobilization of body reserve in supplemented buffaloes which may be due to better energy status. The plasma insulin concentrations were non-significantly (p>0.05) higher in supplemented
group as compared to unsupplemented ones. There was significant difference (p<0.05) in level of milk fat percentage between the groups till 15 days postpartum but non-significant different (p>0.05) upto 45 days postpartum. The probable reason may be due to less mobilization of adipose tissue as a result of improvement of energy status in supplemented buffaloes. There was no significant difference (p>0.05) in milk protein percentage between the two groups till day 15 postpartum but significantly different (p<0.05) at day 30 and 45 postpartum. The MUN level was non-significantly (p>0.05) higher in supplemented buffaloes as compared to unsupplemented group. Within 60 days postpartum, 33.33 % of supplemented buffaloes exhibited overt estrus at an average of 45.2 days and 10 % of unsupplemented buffaloes exhibited overt estrus at 59 days postpartum and all these animals were conceived but the percent conceived was more in supplemented as compared to unsupplemented buffaloes.

To monitor the effect of peripartum nutrition on the calves, 25 calves born from both the unsupplemented and supplemented group were divided into two groups consisting of control (n=10) and treatment (n=15), respectively. Birth weight and growth rate were non-significantly (p>0.05) higher in calves born to supplemented buffaloes as compared to calves born to unsupplemented group. Plasma glucose and insulin concentrations were non-significantly (p>0.05) higher in calves born to supplemented buffaloes as compared to calves born to control group.

In buffalo calves, GnRH treatment was given at 2 months of age. Plasma LH and testosterone concentrations in female and male calves, respectively, were recorded. Plasma LH concentrations were significantly (p<0.05) higher in calves born to supplemented buffaloes as compared to calves born to unsupplemented ones. The peak LH concentration reached earlier (60 min) in treatment calves as compared to control calves (135 min). The area under LH curve was greater (2165.57mIU/ml *min)
in calves from supplemented buffaloes as compared to calves from unsupplemented buffaloes (1112.56mIU/ml*min). The study revealed no significant (p>0.05) effect of dam nutrition on the plasma testosterone concentrations among and between the GnRH treated calves. In male calves castration was done at 4 months of age. Paired testicular weight (PTW) and seminiferous tubule diameter was recorded. PTW and seminiferous tubule diameter were non- significantly (p>0.05) higher in calves born to supplemented buffaloes as compared to calves born to unsupplemented group.

The following conclusions could be drawn from the present study:

1. The prepartum BCS and body weight gain was higher and postpartum BCS and body weight loss was lower in supplemented buffaloes as compared to unsupplemented buffaloes.

2. Higher percentage of supplemented buffaloes (33.33% vs 10%) exhibited overt estrus within 60 days postpartum as compared to unsupplemented group.

3. Birth weight, plasma insulin and glucose concentrations were non-significantly higher (p>0.05) in calves born to supplemented buffaloes as compared to calves born to unsupplemented ones.

4. LH release in response to GnRH in female calves and seminiferous tubule diameter in male calves born at their two and four months of age respectively was significantly (p<0.05) higher in calves born to supplemented buffaloes as compared to calves born to unsupplemented group.

In conclusion, peripartum supplementation of glucogenic diet seems to be beneficial to prevent the loss in body condition and better postpartum reproduction of the buffaloes and reproductive parameters of their newborn calves which may help in initiation of reproductive activity at lower age.