Studies on uterine involution and postpartum fertility as such, and the documented reports on the influence of peripartum nutritional supplementation on these aspects are meager in Jaffarabadi buffaloes, the world famous buffalo breed. Hence these investigations were undertaken at Cattle Breeding Farm, JAU, Junagadh. A total of 40 advanced pregnant Jaffarabadi buffaloes of 2-4 parity were divided into two equal groups, viz., control and treatment groups. The control animals were maintained on standard routine farm feeding schedule and the animals of treatment group were given to additional oral supplements daily with 50 g of chelated mineral mixture and 150 g of bypass fat along with concentrates for 6 weeks prepartum and 2 weeks postpartum. The amount of bypass fat was then given @ 15g/L milk limit up to 200 g/day till 60 days pp. Both the groups were again subdivided equally into two subgroups each of 10 animals to evaluate the effect of Inj. Stimvet (n=10) around day 45 prepartum and on the day of calving, without and with Boli. Exapar (n=5) 2/day for 4 consecutive days postpartum on uterine involution and postpartum fertility including blood profile.

All the buffaloes were subjected to gynaeco-clinical and ultrasonographic observations, using a 5.0-7.5 MHz linear array transducer on day 7, 15, 30, 45, 60 postpartum along with blood collection and for only blood collection on day -45, -30, -7 and 0 (day of calving) for estimation of hormones and blood biochemical constituents peripartum. Animals were followed till postpartum first estrus and conception.

The gross involution of the uterus was observed to be completed by day 37.00±0.56 and 32.75±0.57 (p<0.05) in the buffaloes of control and treatment groups, respectively. The USG screening on day 7 postpartum revealed the wall of the cervix as a bright hyperechoic structure, while its lumen was found to be hypoechoic with bright hyperechoic spots denoting the cervical folds. The wall of the uterine horns was hyperechoic with anechoic lumen with hyperechoic spots (lochia). The echogenicity got pronounced with an increase in postpartum intervals till day 45 postpartum. The uterine caruncles were represented as a bright hyperechoic structures.
Abstract

The mean diameters of cervix and past gravid and non-gravid uterine horns were recorded to be reduced gradually and significantly from day 7 to days 15 and 30 postpartum, and thereafter the reduction was non-significant till day 60 postpartum.

The animals fed with bypass fat and chelated minerals had significantly shorter mean time for expulsion of placenta, for occurrence of first estrus postpartum and service period, with higher conception rate by 120 days postpartum, further the placental expulsion time was also significantly reduced with Exapar and conception rate was apparently higher in Stimvet plus Exapar treated subgroup as compared to other subgroups.

The birth weight of calf had significant effect on the weight of fetal membranes and gestation length, both being higher in heavier calves. The mean gestation length had significant effect on calf birth weight, calves being heavier in buffaloes carrying gestation length beyond 309 days.

The sudden drop in plasma progesterone at calving with subsequent increase during 30-60 days postpartum indicated initiation of postpartum ovarian activity, while plasma oestradiol-17β levels showed an inverse trend with peak value at calving, which later reduced to basal levels till the recrudescence of ovarian activity. But these hormones were not influenced significantly by nutrients supplementation or other treatments used. Significant increase in plasma cortisol level on the day of calving compared to 7 days before and after calving indicated parturition stress, and levels were significantly higher in fat supplemented group. PGFM levels were higher in fat supplemented group throughout the study period and it was the highest on the days of calving in all buffaloes. The mean blood glucose level was the highest on the day of calving, with significantly higher contents in nutrient supplemented than control buffaloes.

The plasma total cholesterol level was observed to be low at parturition and three days postpartum, with a gradual increase with advancing lactation. Significantly higher mean plasma NEFA and BHBA levels were found at 7 days postpartum, and in control than treated group, reflecting energy status of animals. The plasma calcium, inorganic phosphorus zinc and copper levels were found to be significantly higher in nutrient supplemented group as compared to control, with drop in the levels on the day of calving, however, plasma magnesium and other micro-minerals (Co, Fe, Mn) levels did not reveal significant variation between groups and between periods.

It is concluded that additional nutrients supplementation (50 g chelated ASMM and 150-200 g bypass fat daily) over routine farm feeding to Jaffarabadi buffaloes during transitional period from 45 days prepartum till 60 days postpartum significantly improves peripartum nutritional/energy status, uterine health, postpartum fertility and thereby reduces calving interval.