# EFFECT OF AREA SPECIFIC MINERAL SUPPLEMENTATION IN ANOESTROUS CROSS BRED HEIFERS

B. Puvarajan and A.Vijayarajan

Veterinary University Training and Research Centre, Collectorate Campus,

Dindigul 624004, (T.N.)

Corresponding author : vetpuva@yahoo.co.in

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## ABSTRACT

A Study was conducted to evaluate the effect of supplementation Area specific mineral mixture and iodised salt in concentrate for 30 days to induce ovulatory oestrous on 166 anoestrous crossbred heifers in rural hamlets of Madurai District . After supplementation 92.16% heifers (153/166) exhibited oestrous. Of these 149( 97.38%) conceived with 1 to 4 insemination. The first conception rate was 28.18 per cent and second insemination have maximum conception rate (65.77%).However ,progressive decrease in conception rate was observed from third to fourth insemination. The overall conception rate was 27.17 per cent.

**KEY WORDS :** Area specific mineral mixture, Heifers, Conception rate

## INTRODUCTION

Infertility in cattle is due to mineral deficiency mainly limited to Calcium and Phosphorus in addition to trace minerals like copper, cobalt, zinc, iodine, manganese and other salts. Phosphorus deficiency leads to irregular oestrus, anoestrus, decreased ovarian activity and lower conception rate. The matrix of epiphyseal growth plate cartilage was affected during embryogenesis by manganese deficiency in the diet of the animals causing reproductive malformation and birth of calves with congenital defects in the skeletal tissues ( Carvalho et al ., 2010).The present study was carried out to investigate the effect of mineral supplementation on oestrus induction and fertility in cross bred heifers.

## MATERIALS AND METHODS

The study was conducted on 166 crossbred heifers of 25-32 months of age that were either presented to Animal Health camps conducted in Madurai District during last 3 years (2007-2010) or maintained by private dairy farmers in adjacent rural areas of Madurai District. Twenty four numbers of heifers of same age were maintained as control. The body weight of the heifers ranged between 260 and 300 kg. On rectal examination of genitalia, smooth to flat quiescent ovaries were present. The animals were dewormed with a broad spectrum anthelmintic. Except the control, the 166 heifers were supplemented with area specific mineral mixture @ 30 g/animal /day and iodized salt in the concentrate feed for 30 days. The oestrus was detected visually in the morning and evening and was confirmed by per rectal examination. The heifers which exhibited the oestrous signs were inseminated with frozen Jersey Sindhi Cross semen twice at 11-12 h interval. Pregnancy was confirmed per rectum 49-60 days post insemination.

## RESULTS AND DISCUSSION

In the present study, Oestrous was induced in 92.16% (153/166) of crossbred heifers. Among 153 heifers inseminated, 149 ( 97.38%) conceived with 1 to 4 inseminations. Out of these 149 heifers, 42, 98, 14 and 8 heifers were conceived with first , second, third and fourth insemination and the conception rate was 28.18, 65.77, 9.39 and 5.36 per cent respectively. The overall conception rate was 27.17 per cent. The heifers which were maintained as control did not come to heat throughout the study period.

Various workers have also studied the effect of mineral supplementation on oestrus induction and conception in various species. The deficiency of phosphorus and improper calcium and phosphorus ratio cause anoestrous condition in heifers. Nutritional deficiencies combined with worm infection play a major role in infertility of crossbred heifers and cows. (Akhtar et al., 2004). Among the animals under study, 60% of anoestrous cows, 62% of repeat breeder cows and 59% of anoestrous heifers responded to supplementation, indicating the beneficial effect of mineral supplementation on their reproductive performance (Devasenat et al., 2010).

Phosphorus is essential for transfer of biological energy, particularly through ATP, and deficiency of it may arrest the phenomenon of fertilization resulting in the repeat breeder and anoestrus conditions of animals. Phosphorus deficiency when occurs with improper Calcium and phosphorus ratio inclined to more chances of anoestrus in heifers.

In the present study, high oestrous induction and satisfactory conception rate was observed which may be due to combined effect of various elements like zinc, copper, cobalt, calcium, phosphorus, iron as well as iodised salt which have positive effects on steroid synthesis, follicular growth and symptoms of ovulatory oestrous (Singh et al.,2011 ). Srivastav (2008) reported that supplementation of 30-40g commercial mineral mixture /animal/day in concentrate for 20 days induced ovulatory oestrus in 93.93 per cent of anoestrous crossbred heifers and conception rate at first, second, third, fourth and fifth insemination as 32.14,52.63,33.33,33.33 and 25.00 per cent respectively. Moreover the findings of present study support the view of Kumar (2003) who substantiated that nutrition during pregnancy is the most crucial part to maintain dam's body growth and fetal organogenesis, further a deficient nutrition may result in abortion.

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