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RESEARCH ARTICLE

Serum trace mineral profile at different stages of gestation in triple cross-bred cattle

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ABSTRACT - A study conducted on forty four triple cross-bred (½ Kankrej X ¼ Jersey X ¼ Holstein Friesian) pregnant heifers (20) and cows (24) on days 90, 150, 210 and 275 of gestation for serum trace minerals like copper, ferrous, manganese, zinc and cobalt revealed that the values of copper, manganese and cobalt increased significantly during advanced pregnancy and zinc values increased significantly up to day 210 and then fell on day 275. But serum ferrous showed non-definitive trend during the various stages of gestation.

KEY WORDS - Gestation, Trace minerals, Triple cross cattle

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INTRODUCTION.....

Pregnancy is a physiological condition in which the nutritional requirement of the mother becomes greatly intensified since the fetus is dependent on the mother and she has to mobilize nutrients from her tissues for meeting the fetal requirements (Anonymous, 2010 and Abrams, 2007). This may lead to changes in the trace mineral status of the dam and fetus. In order to understand this change better, the current study was undertaken in pregnant triple cross heifers and cows.

RESEARCH METHODS.....

The present work was conducted on pregnant triple cross-bred (1/2 Kankrej×1/4 Jersey×1/4 Holstein Friesian) heifers (20) and cows (24) maintained under standard management and feeding practices at Livestock Research Station, Anand, Gujarat. Blood was collected through jugular venipuncture on days 90, 150, 210 and 275 of gestation in sterilized test tubes and serum was separated by centrifugation at 3000 rpm for 5 minutes. Serum trace elements were estimated by Atomic Absorption Spectrophotometer (ECIL, AAS4141) at the Department of Animal Nutrition, College of Veterinary Science and Animal Husbandry, SDAU, Saradarkrushi Nagar. Statistical analysis was done using Unequal Completely Randomization Design (CRD) as per Snedecor and Cochran (1994).

RESEARCH FINDINGS AND ANALYSIS.....

The findings obtained from the present investigation are presented below:

Serum copper (Cu):

The serum copper (ppm) levels increased gradually from day 90 to day 210 of gestation and then showed a slight decline at day 275, in cows. The levels at day 210 were significantly ($P<0.01$) higher than that of day 90 of gestation. A reverse trend was observed in heifers with the values decreasing from day 90 to day 210 and then increasing non-significantly at day 275 of gestation. Significant ($P<0.01$) difference was noted in the levels of serum Cu between cows and heifers on day 210 of gestation (Table 1).

Similar results have been reported in crossbred cows and heifers by Jacob *et al.* (2003), Mehere (2000), Sivaraman *et al.* (2003) and Yokus and Cakir (2006) and also in buffaloes by Akhtar *et al.* (2009). Rajora and Pachauri (1998) reported significant decrease in serum copper levels from early to late