INFLUENCE OF BLOOD PLASMA MINERALS DURING ESTRUS ON CONCEPTION IN SAHIWAL CATTLE

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ABSTRACT

The present study was conducted to examine the influence of plasma levels of some macro-minerals and essential trace elements on conception in Sahiwal cattle. Blood plasma samples were collected from estrus cows (n=40) to estimate levels of macro-minerals viz. calcium, inorganic phosphorus and magnesium; and some essential trace elements viz. copper, cobalt, iron and zinc. Animals were inseminated 12 h after onset of estrus with good quality frozen semen. Significant differences ($p<0.05$) recorded in blood plasma calcium, inorganic phosphorus and magnesium between animals of conceived and non-conceived group suugested their association with conception failure in Sahiwal cattle.

Key words: Conception, Estrus, Plasma Minerals, Pregnancy, Sahiwal cattle

The deficieny of circulating minerals upsets the proper functioning of genital organs through mineral deficieny induced enzymatic dysfunction, hence, the occurrence of infertility in cattle (Hidiroglou, 1979). Therefore, the present investigation was conducted to compare the blood plasma minerals on the day of estrus and their association, if any, with subsequent conception rate in Sahiwal cattle.

Fourty healthy suckled postpartum Sahiwal cattle of Bull Mother Experimental Farm, Anjora with normal reproductive tract and voluntary waiting period of 60 days were selected following detection of standing estrus through vasectomized bull. All were inseminated with good quality frozen semen 12 h after onset of estrus. Blood samples were collected from each animal on the day of insemination, the plasma was separated and stored at -20^{0}C till analyzed. Plasma calcium, inorganic phosphorus and magnesium were determined by semi auto-analyzer using diagnostic kit. Plasma copper, cobalt, iron and zinc were estimated using atomic absorption spectrophotometer. Following pregnancy diagnosis between days 50-60 post-insemination, the animals were considered into conceived (n=20) or non-conceived (n=20) group. Independent 't' test was applied to determine difference in plasma concentrations of minerals between two groups of animals using SPSS computer programme version 10.0.

Plasma calcium, inorganic phosphorus, magnesium and copper was high ($p<0.05$) on the day of estrus in Sahiwal cattle that conceived subsequently (Table). In previous studies in dairy animals, low levels of these minerals lead to an alteration in release of reproductive hormones and thus, an increase in number of services per conception (Sukhija and Sengupta, 1986; Asthana *et al.,* 2007 and Kumar *et al.*, 2009). In fact, copper deficiency might have lead to early embryonic death in Sahiwal cattle. However, plasma iron and zinc were similar on the day of estrus in animals of conceived and non-conceived group ($p>0.05$, Table), thus indicating lesser role of these minerals in appropriate fertile life of Sahiwal cattle. In brief, deficiency of plasma calcium, inorganic phosphorus, magnesium and copper on the day of estrus might be associated with conception failure in Sahiwal cattle.

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