

Profile of serum calcium, inorganic phosphorus, total protein, albumin and globulin in superovulated cattle*

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ABSTRACT

Thirteen, gynaecologically normal, Sahiwal cows were treated with 50 mg FSH-E in eight divided doses. The donors were classified as good (>3 CL), poor (3 CL) or non (<3 CL) responders. The blood serum levels of calcium, inorganic phosphorus, total protein, albumin and globulin were estimated in all cows on day of PGF₂ α treatment, day of superovulatory estrus and day of embryo collection. The serum concentrations of all the above parameters were lower in non responding than poor and good responding donor cows.

Key words : Superovulation, cattle, calcium, phosphorus, albumin, globulin, total protein

Poor and unpredictable superovulatory response is a major limiting factor in livestock embryo transfer venture. Blood levels of calcium, inorganic phosphorus, total protein, albumin and globulin in superovulated cattle have been reported in the present paper.

Thirteen, clinically healthy, normal cycling, Sahiwal cows selected as embryo donors at Livestock Research Centre (L.R.C.), G.B. Pant University of Agriculture and Technology, Pantnagar were superovulated with 50 mg FSH-E (FSH-Equine, Schering, USA) divided into eight doses in decreasing order i.e. 7.5, 7.5; 6.5, 6.5; 6.0, 6.0; and 5.0, 5.0 mg, administered by i/m route, for four days at 12 hour interval. The treatment was started on 11th day of the cycle. Dinoprost Tromethamine 25 mg (Lutalyse, Unichem Lab Ltd., Mumbai) was injected intramuscularly at 48 and 60 hours after the start of the superovulatory treatment. The cows were inseminated at 12, 24 and 36 hours after onset of estrus with good quality semen. Embryo collection was carried out by non surgical method on day 7 post insemination.

Ovaries of donor cows were palpated per rectum one day before the flushing. On the basis of

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superovulatory response animals were classified into Group I (CL >3), Group II (CL-3) and Group III (CL <3). Blood samples were collected from jugular vein from all donors on day of PGF₂ α treatment, day of superovulatory estrus and day of embryo collection. Serum was separated and stored in clean glass vials at -20°C until analysis. The serum was analyzed for calcium, inorganic phosphorus, total protein, albumin and globulin using 'System Reagent Kits' on fully automatic biochemical analyzer system (Nexct®, Schiaparelli Biosystems, U.S.A.).

Results revealed that out of total animals, nine cows (69.23%) responded (≥ 3 CL) to the superovulatory treatment and were subjected to embryo collection. Percentage of donor in Gr I, II and III were 30.77 (4/13), 38.46 (5/13) and 30.77 (4/13), respectively. The mean ovulation rate in these cows was 4.22 ± 0.596 while the average number of embryo per donor flushed was 0.89 ± 0.564 . The blood serum levels of calcium, inorganic phosphorus, total protein, albumin and globulin are presented in Table 1. The mean serum calcium and inorganic phosphorus concentrations on day of PGF₂ α treatment was significantly higher in Gr I than Gr III indicating adverse effect of the low serum calcium and inorganic phosphorus on superovulatory response. Calcium is known to be vital for maintenance of normal fertility

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- Post graduate in the field of Animal Reproduction, Theriogenology and Biotechnology
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