BIOCHEMICAL PROFILE OF DEONI COWS SUPPLEMENTED WITH HAEMATINIC AND IRON FOR INDUCTION OF ESTRUS

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ABSTRACT

Post partum anestrus Deoni cows were treated with haematinic and mineral supplements and it was observed that 83.33 per cent cows responded to Cofecu plus treatment with 41.67 per cent conceptions, 91.67 per cent cows responded to Cofecu + ovifertin treatment with 75.00 per cent conceptions and 91.67 per cent cows responded to Ferrocom + Ovifertin treatment with 66.67 per cent conceptions. The post treatment levels of haemoglobin (g%), serum protein (g%), serum copper (mcg%), serum cobalt (mcg%) and serum iron (mcg%) were found to13.45 ± 00.04, 13.46 ± 00.04, 13.45 ± 00.04; 07.75 ± 00.21, 08.99 ± 00.21, 09.06 ± 00.21; 102.28 ± 07.19, 106.26 ± 07.1, 102.52 ± 07.19; 02.48 ± 0.005, 02.54 ± 0.005, 02.20 ± 0.005 and 200.47 ± 20.10, 202.22 ± 20.10, 196.20 ± 20.10 respectively. Blood biochemical analysis proved significant increase in the levels of haemoglobin, Iron, copper and cobalt with the herbal therapies in all treatment groups than that of the control groups with exception of protein levels.

Key words: Biochemical, Deoni, Estrus, Haematinic, Minerals

Deficiency of micronutrients and mineral imbalances are often cited as cause of anestrus in dairy cattle. Minerals are required for reproduction because of their role in metabolism, maintenance and growth (Tandle *et al.,* 1997). Anaemic animal fails to exhibit normal reproductive cycle and hence, reproductive priorities are compromised. Treatment of anaemia may induce reproductive cyclicity as copper; iron and zinc are required for synthesis of protein and RBCs, which carries oxygen to different parts of body to strengthen immune system and cellular metabolism (Roberts, 1971). Blood profile is rarely estimated in the diagnosis of anestrus animals although nutrition is the major cause of infertility under field conditions. Hence, the present trial was conducted to study blood biochemical profile in post partum anestrus in Deoni cows treated with haematinic and iron preparations with and without herbal heat inducing therapies.

Thirty-six post partum Deoni animals of 4 to 7 years of age, 3rd to 5th parity and approximately 325 to 350 kg body weights from cattle breeding farm, Veterinary College, Udgir, which were reported to be anestrus were included in the present trial. The selected animals were divided during late winter months in to three groups. Group-I and II received mineral haematinic supplementation (tablet cofecu plus @ 2 tablets daily for ten days) and Group-III with herbal iron supplementation (Ferrocom powder : consisting of elemental iron 2.76 mg per 100 mg powder @ 3 g per 100 kg body weight for 3 days). Herbal heat inducer therapy (Ovifertin @ 3 g per 100 kg body weights for 3 days) was administered in group II and III after haematinic supplementation. Blood collections were carried out under sterile conditions through jugular veins in animals under trial in two phases i.e. A day before start of

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treatment and on 5th day of completion of treatment or on the day of estrus for estimations of various serum biochemicals with semi-automated blood analyzer (StatFax, 2000). The treated animals were followed for recording of reproductive parameters. The recorded data and clinical observations were statistically analyzed as per the methods described by Snedecor and Chochran (1968).

The induction of estrus was recorded in 10 (83.33% of cows from Group I and 11 (91.67%) cows in Group II and III with conceptions of 05 cows (41.67%) in group I, 9 cows (75.00%) in group II and 08 cows (66.67%) in Group III respectively.

Haemoglobin

The level of haemoglobin was significantly increased (P< 0.05) in responded animals as against pre treatment level in all treatment groups. No report could be traced out with comparable increase in the level of the haemoglobin after treatment of anestrus cases with haematinics. However, Pradhan *et al.* (1995) reported lower levels of protein and haemoglobin in anestrus crossbred cows. Ramkrishna (1997) reported low levels of haemoglobin in anestrus crossbred Jersey cows and reported long-term protein and subsequent inadequacy of globulins in the cases and further concluded that low haemoglobin levels can influence the tissue oxygenation of reproductive tract and can influence cyclicity.

Serum Protein

Protein level was found to be significantly increased (P<0.05) in animals in estrus as against anestrus cases in three groups whereas the levels were *at par* in two treatment groups which is indicative of inconsistent result of protein levels in cyclic and anestrus cases. Shrivastava and Kadu (1995) reported significantly higher level of serum total protein in normal cyclic heifers than in delayed pubertal crossbred heifers. Tandle *et al.* (1997) reported significantly higher level of total proteins during estrus stage than that of anestrus in non descript cows. Low level of serum proteins may lead to deficiency of certain amino acids, which are required for gonadotropin synthesis thereby impairing the reproduction (Vhora, *et al.*, 1995). However, in the present study the levels of serum proteins in different groups remained at par in pre and post treatment groups indicating the direct and significant role of other biochemicals in induction of ovarian cyclicity.

Serum Iron

The serum iron concentrations were significantly increased (P<0.05) in all responded animals from different treatment groups. Roberts (1971) reported that low iron could cause anaemia, debility, lack of appetite, reduce intake and failure of estrus. Vadnere and Singh (1989) reported significantly lower levels of copper and iron in anestrus crossbred cows than that of normally cycling cows and positive correlation was reported in iron and copper. Present report is in full agreement with aforesaid references and administration of iron preparation has been found to be very useful for induction of estrus.

Serum Copper

The research trial was conducted in Deoni tract, which is suspected for copper deficiency syndrome characterized by depigmentation in buffaloes. Bhoopendra Singh *et al.* (2006) reported significantly lower level of copper in anestrus buffaloes as compared to normal cyclic buffaloes. In support of the report, serum copper levels observed in the present report indicate positive relationship of the micro mineral with reproductive cyclicity. The levels of serum copper concentration were found to be significantly increased in all treated cases.

Deficiency of copper conditioned by molybdenum had been confirmed in cattle and buffaloes of Punjab (Singh, 1990, Randhawa, 1993). Randhava *et al.* (2004) reported successful use of parentral copper supplementation (@ 150 mg copper gycinate subcutaneously) for induction of 90.30 per cent estrus in anestrus buffaloes with 63.60 per cent conceptions and suggested that hypocuprosis due to low copper: molybdenum ratio was the possible cause of anestrus in buffaloes. Homse (1981) also ascribed silent estrus

and anestrus due to molybdenosis induced hypocuprosis in cow heifers.

Serum Cobalt

Serum cobalt levels were significantly increased ($P<0.05$) in all treated anestrus cases as against control, indicates positive correlation of cobalt for induction of estrus. Cobalt deficiency leads to macrocytic normochromic anaemia and marked reduction in conception rate. The cobalt estimations are considered to be non significant in assessment of anestrus condition in comparison with copper estimations. The cobalt levels are also considered as variable with vitamin B12 synthesis and reproductive health status of the animals. On scanning the available literature, the levels of cobalt estimations in anestrus cases were not found.

Blood biochemical analysis proved significant increase in the levels of haemoglobin, Iron, copper and cobalt with the herbal therapies in all treatment groups with exception of protein levels. It may be concluded that haematinic preparations along with herbal heat inducing therapy is effective in induction of estrus in anestrus cases under field conditions.

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