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**Ghadge RS**  
Department of Veterinary  
Medicine, Post Graduate  
Institute of Veterinary and  
Animal Science, Krishi Nagar,  
Akola, Maharashtra, India

## Biochemical changes in anemic goats after haematinics administrations

**Ghadge RS**

### Abstract

An experiment was carried out to study the anaemia in lactating goats from Deccani Sheep and Berari Goat Research station Borgaon Manju Dist. Akola. Total 18 lactating goats aged between 2-4 Years free from parasitic infection and having pale mucous membrane and having lower haemoglobin concentration (below 8 gm%) were selected and divided randomly into three equal groups out of which one group kept as control (T1) without treatment. Second group (T2) was treated with injection imferon (iron dextran 50 mg/ml) twice in a week @ 3-4 mg/gm of Hb deficiency per kg body weight. Intramuscularly for 2-3 weeks. Third group was treated with oral haematinic preparation (Ferrous sulphate 4.5 gm, Copper sulphate 0.3 gm, Manganese sulphate 0.1 gm, Cobalt sulphate 0.1 gm) @ 5 gm powder orally once daily till the rise in Hb concentration. All the goats were subjected for clinical haematological and biochemical studies before treatment and on day 15 and 30 of post treatment.

The anaemic goats were showing signs of variable reduced appetite, pale visible mucous membrane, weakness and reluctance to move. The clinical study revealed increase in respiratory and heart rate and mild rise in body temperature and decrease in body weight. The administration of parenteral haematinic preparation resulted into early clinical improvement than oral haematinic preparation.

The haematological study revealed significant decrease in Hb, PCV and TEC and apparent decrease in TLC and no alteration in DLC in anaemic goats. The Hb, PCV and TEC values improved after administration of parenteral and oral haematinic preparation. The erythrocyte indices study revealed increase in MCV and decrease in MCH without affecting MCHC indicated that anaemia produced was Macrocytic Normochromic type. The biochemical study revealed significant decrease in serum iron and copper and apparent decrease in serum total protein and albumin in anaemic goats. After treatment with parenteral and oral haematinic preparation, all the biochemical parameters improved as compared to control group.

From the present investigation it is concluded that the lactating goats had nutritional anemia due to deficiency of iron and copper and administration of Injection Imferon and oral haematinic preparations within the experimental period, indicated effectiveness of both the treatment to alleviate anaemia in Goats. However the administration of injection Imferon was observed to be more efficient than oral haematinic preparation.

**Keywords:** anaemia, haemoglobin, PCV, imferon, goats

### Introduction

Goats are an important species of livestock for the poor farmers of India and play an important role in improving national economy through meat, milk, skin and hair production. Anemia is one of the common condition occurs in goats affecting production performance of goats. There are various causes of anemia. The dietary deficiency is one of the important cause of anaemia apart from anaemia due to helminth infestation in goats. The dietary deficiency anaemia occurs due to diminished Haemoglobin formation or erythrocytes. The reduced haemoglobin formation may be attributed to dietary deficiency of iron, copper, cobalt, ascorbic acid, pyridoxine, nicotinic acid, riboflavin etc.

### Material and Methods

The present study was carried out at Deccani sheep and Berari goat Research station, Borgaon Manju Dist. Akola and the department of Medicine PGIVAS Akola.

### Selection of experimental animals

Total Thirty eight female lactating goats aged between (2-4 years) maintained under semi intensive farming system from deccani sheep and Berari goat research Station Borgaon Manju Dist. Akola were screened for endoparasitic infection by fecal sample examination. And

**Corresponding Author:**  
**Ghadge RS**  
Department of Veterinary  
Medicine, Post Graduate  
Institute of Veterinary and  
Animal Science, Krishi Nagar,  
Akola, Maharashtra, India

Haemoprotozoan infection by microscopic examination of blood smear. Out of which eighteen female goats free from endoparasitic & blood protozoan infection and having Haemoglobin concentration below 8gm% and showing pale mucous membrane were selected and divided into three equal groups, comprising of six goats in each group.

### Treatment of animals

#### First group (T1)

Each animal of this group was kept as an untreated control.

#### Second group (T2)

Each animal of this group was treated with Injection Imferon twice in a week which contain iron dextran at a concentration of 50 mg of iron per ml given by intramuscular route. The total dose of Iron was given as recommended by Seigmund (1979) <sup>[12]</sup> i.e. approximately at the rate of 3-4 mg/gram of Hemoglobin deficiency/kg body wt.

#### Third group (T3)

Each animal in this group was treated with oral preparation of haematinic powder which comprised of

Ferrous sulphate IP:	4.50 gm
Copper sulphate IP:	300 mg
Manganese sulphate IBPC:	100 mg
Cobalt sulphate B Vet C:	100 mg

### Result and Discussion

In the present investigation the anaemia was studied in lactating female goats free from parasitic infection at Deccani Sheep and Berari Goat research Station Borgaon Manju Dist. Akola.

The serum total protein and serum albumin values were found to be reduced in anaemic goats. The treatment with both the drugs observe to be helpful in initiating improvement in serum total protein & albumin values towards normalcy and could be made up over by proper feeling or supplementation of protein rich diet. The serum iron and serum copper level were found significantly raised in both the treatment groups as compared to the permanent and control values. Administration of iron by parenteral route was observed to be more efficient than its oral administration. The oral iron has to pass through various metabolic processes before it enters the circulation, whereas the intramuscular iron has an easy entry. The serum iron and copper level were recouped more efficiently by the parenteral haematinic preparation therapy.

In the present investigation all anemic goats were showing the signs of variable reduced appetite, paleness of visible mucous membrane, muscular weakness, reluctance to move and general weakness. Similar clinical observations were also recorded by Sarkar and Misra (1991) <sup>[11]</sup>, Sarkar *et al.* (1992) <sup>[11]</sup>, Radostitis *et al.*, (2000) <sup>[10]</sup> and Pophale (2002) <sup>[8]</sup> in anemia caused due to nutritional deficiency. The biochemical study revealed significant decrease in serum iron and copper and apperant decrease in serum total protein & albumin in anaemic goats.

Based upon the biochemical findings the present investigations confirms the efficacy of inj. Imferon and oral haematinic mixture. The administration of inj. Imferon and oral haematinic mixture. The administration of inj. Imferon has superior over the oral haematinics mixture. Also reported by earlier worker. (Sarkar *et al.* 1992, Ramkrishnan *et al.* 1992, Pophale 2002) <sup>[8, 9, 11]</sup>. From the present investigation it

is observed that the administration of haematinic preparation earlier orally and parentally were found effective to alleviate anaemia caused by nutritional deficiency during the lactating stages in goats.

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