

## HAEMATOLOGICAL CHANGES DURING VARIOUS WAVE FORMS OF ELECTRO ANAESTHESIA IN GOATS\*

M.V.N. Naidu<sup>1</sup>, O. Ramakrishna<sup>2</sup> and R.V. Suresh Kumar<sup>3</sup>

Department of Surgery and Radiology  
College of Veterinary Science, Tirupati 517 502 (A.P.)

Electroanaesthesia produces rapid induction and quick recovery of the patient without the body system (Lumb and Jones, 1973). It has been used as an anaesthetic agent in cattle (Short, 1965), buffaloes (Rao and Rao, 1978), dogs (Herin, 1963 and Venugopal Reddy *et al.*, 1989) and sheep (Chandrasekhar, 1990). As there is paucity of literature on its effects in goats, in the present experiment electro-anaesthesia was produced in goats and its effects of various haematological parameters were studied.

### Materials and Methods

Eighteen goats of either sex weighing 20-30 kilograms were divided into 3 groups of 6 animals each, electroanaesthetized with sine, square and triangular wave forms of current. An integrated circuit electroanaesthetic apparatus delivering a current of 12 milliamperes was used. Anaesthesia was maintained at 700 Hertz per second for 1 hour and discontinued. Blood samples were collected from Jugular vein in oxalated vials prior to induction, during anaesthesia and 24 hours after discontinuance of electric current. Total erythrocyte count, total leucocyte count, haemoglobin, and packed cell volumes were determined as per the standard procedures. Differential leucocyte counts were made on

blood smears prepared without any anticoagulant and stained with Wright's stain (Schalm *et al.*, 1975). The data were analysed using students 't' test (Snedecor and Cochran, 1967).

### Results and Discussion

The total erythrocyte counts were increased non-significantly during the anaesthesia in all the animals subjected to different wave forms of electric current. The base level haemoglobin values of  $11.6 \pm 0.37$ ,  $11.13 \pm 0.46$  and  $12.07 \pm 0.53$  grams per cent in three groups respectively increased non-significantly during anaesthesia. Contrary to these findings Herin (1968) observed a significant increase in haemoglobin levels only in sine and triangular wave forms. Though there was a rise in packed cell volume values during anaesthesia, the alterations were non-significant. The increase in packed cell volume values was related to increased total erythrocyte count and haemoglobin values. The total leucocyte counts recorded a significant ( $P > 0.01$ ) increase in all the three groups from the base values of  $10.15 \pm 1.03$ ,  $6.62 \pm 0.71$  and  $9.63 \pm 0.76$  to  $13.00 \pm 1.27$ ,  $9.47 \pm 0.71$  and  $12.79 \pm 0.62$  thousands per cubic millimeter in sine, square and

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1) Assistant Director (AH), Puttur

2) Former Professor and University Head

3) Assistant Professor

triangular wave forms of current correspondingly. There was significant neutrophilia and lymphocytopenia during anaesthesia. The changes in eosinophil and monocyte counts were not significant. Short (1965), Kumar *et al.* (1982) and Chandrasekhar (1990) also reported similar observations during their experimental studies. This might be due to increased adrenal activity and stress. However Herin (1963) reported no significant changes in differential leucocyte count in dogs during electroanaesthesia. These changes are suggestive of safe usage of electroanaesthesia for various surgical operations on goats. Though significant leucocytosis and neutrophilia appeared during anaesthesia these changes did not affect the patients undergoing surgery. All the animals recovered immediately after discontinuance of anaesthesia.

### Summary

In the present study 18 goats were subjected to different wave forms of electroanaesthesia. Haematological changes before, during, and 24 hours after discontinuance of electric current were estimated. All the three (Sine, square and triangular) wave forms produced similar haematological alterations. Haemograms of all the three groups showed a non-significant increase in total erythrocyte count, haemoglobin and packed cell volumes with significant leucocytosis, neutrophilia and lymphocytopenia during anaesthesia. These alternations reached nearly base levels following discontinuance of the electric current.

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