

BLOOD BIOCHEMISTRY VALUES OF SHEEP (*OVIS ARIES LIGERIENSIS*)

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Abstract—1. Analysis of biochemical parameters were carried out on material pooled from 30 female sheep (*Ovis aries ligeriensis*).

2. The values determined were for the common metabolites and enzymes utilized for specific studies in general metabolism (urea, glucose, cholesterol, lipids, bilirubin, uric acid, creatinine, alkaline phosphatase, GOT, GPT, LDH, LAP, CGT, CK and amylase).

3. Results of these studies were compared with values from normal human adults.

4. The differences obtained in human and sheep ranges can be explained by the different physiology of the two species.

5. This study gives values for the sheep as an experimental animal in biomedical research.

INTRODUCTION

The use of laboratory animals in research has increased, with a larger number of variety of animals and species being utilized. The size, origin, diet, physiology and biochemistry vary not only in each species but also within each breed.

The need to establish ranges of normal laboratory values for each species is obvious. Base-line normal parameters are essential to the selection of normal healthy animals. Each animal has its own much narrower normal variability, which can be used for future comparison.

Many devices for temporary or permanent replacement of function of organs of the human body have been developed or investigated using large laboratory animals including the sheep (Anderson, 1971).

Sheep have been used in cardiovascular experiments (Hecker, 1983) such as cardiac valve replacements, experimental arteriovenous fistulae and aneurisms (Stehbens, 1968) and the sheep is considered a more satisfactory animal for testing of cardiac pacemakers than the dog (Cummings *et al.*, 1973).

The purpose of the present report is to define the biochemical normal values in the sheep (*Ovis aries ligeriensis*) used in our Department for Cardiac Assist Support Research.

MATERIALS AND METHODS

Animals

Thirty adult female sheep (*Ovis aries ligeriensis*) were used to establish normal physiological data. Upon arrival

at the animal-care facility, each animal was routinely dewormed with thiabendazole (50 mg per kilogram of body weight).

For several days to one week before the samples of blood were collected, the sheep were confined to stalls and food and water was provided *ad libitum*.

Collection and preparation of blood samples

Food and water were withheld 12 hr prior to collection. No preoperative medication was given.

The blood was taken via puncture of the left jugular vein. The anticoagulant used was sodium heparin (1%). Plasma was separated by centrifuging the blood for 15 min at 2000 rpm. Blood and plasma were processed using only plastic syringes and tubes.

Blood tests

All the biochemical tests were performed in duplicate, using an automatic Autoanalyzer HITACHI 737. The determinations were:

(a) Metabolite assays: urea, glucose, cholesterol, triglycerides, phospholipids, total bilirubin, uric acid, creatinine and total proteins.

(b) Enzyme assays: alkaline phosphatase, glutamic oxaloacetic transaminase (GOT), glutamic pyruvic transaminase (GPT), lactic dehydrogenase (LDH), leucine amino peptidase (LAP), gamma glutamyl transpeptidase (GGT), total creatine kinase (CK) and amylase.

Data processing

All data were processed using the Statistic Analysis System of Hewlett Packard. The statistical analyses performed were: mean, range (minimal and maximal value) and standard deviation.

RESULTS

The aim of this work is to characterize biochemical parameters of sheep, in order to use this species in other research work.

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