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RESEARCH PAPER

Changes on the nitrogen metabolism in *calotes versicolor* due to helminth infection

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ABSTRACT

In the post-helminth infection, proteins and related molecular changes have been studied in the liver of *Calotes versicolor* due to the intestinal infection by *Proteocephalus beddardi.* Various biochemical parameters that have been investigated are Ammonia, urea, uric acid and glutamine. All the parameters that have been assayed showed an increase in the liver. The increase in the content of substrate and the activity levels of enzymes suggest that in the liver, the rate of nitrogen metabolism is greatly enhanced. These indicate that liver plays an active role in smoothening the fl.uctuations of metabolism, generated by helminth worm. The increase in the various biomolecules indicates biochemical adaptations of hosts to the parasitic adaptations.

Key words : Nitrogen metabolism, *Calotes versicolor, Proteocephalus beddardi.*

Proteins are the complex group of biomolecules found in almost all the tissues. The structural importance of proteins is due to the role played by these molecules in the formation of the cell membrane. The functional importance is due to the role played by proteins either directly or indirectly in the metabolic processes of body. Therefore, proteins can be considered as important requirements for the structural integrity and physiological functions in the body of an organism.

When proteins are degraded, aminoacids are formed and they undergo various types of degradation mechanisms like transamination, deamination, oxidation etc. At the end of the catabolic process of proteins excretory products like ammonia and urea are formed. Ammonia, urea and uric acid are nitrogenous components. Ammonia is one of the toxic agents released into the animal tissues. Ammonia is also formed in the degradation reactions. In ureotelic animals, ammonia is removed through urea cycle. In the urea cycle, carbomoyl phosphate further condenses with a molecule of ornithine to form citrulline catalyzed by the enzyme carbomoyl transferase. In urecotelic animals like *Calotes versicolor,* which is a terrestrial reptile, the main form in which the amine group is excreted out is uric acid. The helminth infection causes a number of changes in the energy systems of the host. The leucocytosis, antibody formation, increase in the rate of metabolic activity become more evident in the post helminth infection period. Due to these factors, the turn over rate of proteins gets increased and such alterations have been studied by a number of workers like Andrews *et al.* (1944), Ross and Todd (1968), Christie (1970), Ansari and Singh (1974), Pathak *et al.* (1984), Mohan Reddy (1985), Rama Hanumantha Rao (1985), Swamy (1986), Muralidhar *et al.* (1981) and Bikshapathi (1992). The study has been made on nitrogen metabolism of liver of *Calotes versicolor* due to the intestinal infection with *Proteocephalus beddardi*. Various parameters studied in the present investigation are ammonia, urea, uric acid and glutamine.

MATERIALS AND METHODS

The *Calotes versicolor* were collected from the local area, within the radius of 15 km from the vicinity of Kakatiya University Campus. These live animals, both infected and uninfected were cut open and the liver tissue was collected for the investigation of Ammonia, urea, uricacid and glutamine.

The ammonia content was estimated by the method of Bergmeyar (1965). 5% tissue homogenate was prepared in ice cold distilled water and centrifuged at 3000 rpm for 10 minutes. Supernatant was used to estimate ammonia. To 1 ml of supernatant was added 2 ml of 15% PCA and centrifuged at 1000 rpm for 15 minutes. The supernatant was neutralized with 2 ml of 15% NaOH, 0.5 ml of Nessler's reagent and 1 ml of distilled water were added. The optimum density were read at 495 mμ after adjusting the calorimeter to zero with the blank.

The ammonia content is expressed in mg/100 mg of tissue. The urea content was determined by the method of Natelson (1971). 2% homogenate of the tissue was prepared in cold 15% PCA and centrifused at 1000 rpm for 15 minutes. The supernatant was used to estimate the urea content. To 0.5 ml of diacety l monaxine was added and heated at 100°C for 30 minutes, cooled to room