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Primasbulura alata: Estimation of serum glucose changes in infected Perdicula asiatica

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Abstract
Glucose is a monomer of glycogen and occurs generally in the blood circulation. It was formed by the hydrolysis of glycogen stored in storage organs and this glucose was made available for the formation of glycogen.

Keywords: primasbulura alata, Perdicula asiatica, serum, glucose, helminth infections

Introduction
The availability of glucose to various tissues was highly essential for the reason that it was the principal material needed for providing energy. For this purpose glucose was supplied through blood and it was the most supplied through blood and it was the most important monosaccharide that occurs dissolved in the plasma and was conveyed to all cells in the body for providing energy. To maintain this process of circulation excellent homeostatic mechanism that control the carbohydrate mechanism and keep the blood sugar content in the physiologically significant levels exist in the body of an animal. In helminth infections it is quite possible that these homeostatic devices fail and result in the increased or decreased blood glucose levels. This field of study has received the attention of many workers. Some of the prominent works on the effect of helminth infections on the blood sugar are Hardwood *et al*. 1937 [10], Augustine, 1936 [1]; Kawal, 1937; Frank, 1944 [8]; Goldbergine, 1962 [9]; Singh *et al*., 1973 [18] Awadali *et al*., 1977 [2]; Joshi, 1979 [11]; Rama Hanumantha Rao, 1985 [16]; Mohan Reddy, 1985 [15], Krishnayya, 1988 [14] and Dharma goud,1991 [5].

Materials and Methods
The experimental material of the present study viz., Perdicula asiatica were collected from different areas of Hyderabad. They were brought to the laboratory and maintained for 24 hours to acclimatize to laboratory condition. The blood was collected from directly from the cardiac puncture into a dry and clean test tube without adding any anti-coagulant. It was left in dark for 30 minutes and the blood was allowed to clot at room temperature. The blood clot was separated from the wall of test tube and it was centrifuged at 2000 rpm for 30 minutes. The serum was collected and stored in a refrigerator for the experiment assay.
After collection of blood, they were decapitated and cut open. The sex of the host was recorded and the digestive system was isolated in physiological saline.
The intestine was screened for Primasbulura alata infection when this nematode
Was present, host and the serum were taken as infected one's and in their absence, hosts and the serum were treated as controls.
For biochemical parameters the serum from normal and infected male and female hosts were used. The content of glucose was estimated by this method Of Folin Wu (1929).

Results
Results obtained on the serum of glucose changes were shown. It suggests that glucose content of normal male and female birds was 42.6 $\pm$ 3.8 and 46.4$\pm$ 3.9mg/100 mol serum respectively. In infected hosts, the glucose content in males showed a decrease by 19.71% and in females the decrease was 13.36%.
These changes are statistically significant.

Table 1: Blood Glucose Content in Perdicula Asiatica

Type	Control	Infected	Change	% Change	'P' Value
Male	42.6	34.2	-8.4	-19.71	>0.01
S.D.	$\pm$3.8	$\pm$5.1			
Female	46.4	40.2	-6.2	-13.36	>0.05
S.D.	$\pm$3.9	$\pm$4.9			

Values expressed are as mg/100 ml serum

Discussion
The most fundamental requirement for any parasite to live in any host was the availability of nutrient molecules that should be readily available was the glucose. The present results on the serum glucose content in the normal and infected hosts suggests that there was a definite decrease glucose in the helminth infection period in males and females. This type of decrease or hypoglycemia in helminth infection have also been reported earlier by some investigators like Goldbergiene, 1962 [9]; in rabbits due to Fasciola hepatica infection, in human beings, dogs and rabbits infected Trichinella spiralis such decrease has been reported by Hardwood *et al*., 1937 [10]. In human beings infected by Ascaris lumbricoides the decrease have been reported by Frank 1944 [8]. The decrease in the serum glucose of Perdicula asiatica observed in the present study was in close agreement with the investigations of the above works. This decrease of glucose in the blood can be considered as a adaptation due to the presence of parasite. This glucose was utilized to meet the extra energy demands of host. Generally, in the host there was a maintenance of glucose at constant level but in the present study a decrease of about 19% in males and 13% females have been observed.
Fundamentally helminths are anaerobic in their metabolism but also utilize oxygen when it was available (Von Brand, 1973) [20] that means helminths neither Obligatory nor aerobes.

These are facultative aerobes

Under some circumstances there were possibility that the nutrient molecular content in the host tissue gets depleted.

This type of depletion was observed in the glucose molecules. Due to this condition, excess of glucose gets distributed to different parts of body resulting in its decrease in the serum. While working on the effect of Primasbulura alata in the intestinal glycogen and glucose content, it showed a significant increase in their levels due to helminth infection. Such an increase in the infected tissues have been assumed the adaptations to resist the pathogenicity. If this was so, the decrease absorbed in the serum was justifiable for the reason that most of this monomer was withdrawn from the blood and used for synthesizing the glycogen in intestine itself and not pumped into the blood.

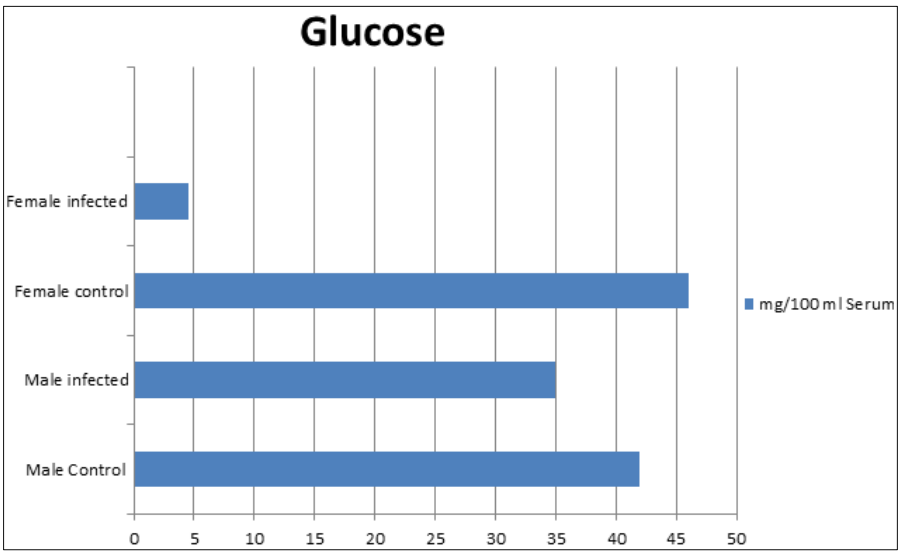

Fig 1

Further, it was also possible that presence of parasites may lead to mechanical damage to the alimentary canal. Such damaged tract may not be able to absorb the glucose and send it into the gland resulting in the decreased serum glucose level.

Whatever may be the reason, it was observed that in helminth infections there was a tendency for the serum glucose to decrease. This decrease may also be possible due to the diversion of blood glucose to the infected organ as helminth infected organs have been shown to possess high sugar content compared to Normal by Kameshwari, 1978 [12]; Bhonsle *et al*., 1981 [3]; Sulochana, 1982 [19] Mohan Reddy 1985 [16], Krishnayya, 1988 [14] and Dharma Goud, 1991 [5].

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