CHANGES IN BLOOD GLUCOSE AND CHOLESTEROL CONTENTS OF GALLUS DOMESTICUS, FOLLOWING A SUDDEN EXPOSURE TO HIGHER TEMPERATURE

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M. S. Rautela & B. D. Joshi*

Department of Zoology, Government Post Graduate College, Pithoragarh, India.
*Department of Zoology, Gurukula Kangri University, Hardwar, India.

Sudden rise in the ambient environmental temperature of Gallus domesticus causes rapid alteration in blood glucose and cholesterol contents. Blood cholesterol values lowered while blood glucose values showed fluctuations, throughout this experiment.

Temperature is one of the most important ecological factors, which has vital influence on the life of organisms. Studies on the temperature related blood values are not available in birds, but some work has been reported on the haematological parameters of non-avian species. The present study aims at describing the immediate changes in blood glucose and cholesterol contents of Gallus domesticus, caused by the sudden and sharp rise in its ambient temperature.

Forty four female specimens of Gallus domesticus of sixteen month age were brought to the laboratory from local State Poultry Farm at Pithoragarh. The method of their maintenance, feeding and taking blood samples etc. were the same as described earlier. The total blood glucose was determined by the Nelson-Somogyi method, while the blood cholesterol level was determined following the method of Rosenthal et al.

To start this experiment, the 44 female birds were divided in two groups of 24 and 20 birds. A high temperature of 50 ± 2°C was thermostatically maintained in another room. The first group of 24 birds was transferred to this high temperature. The second group of 20 birds was allowed to remain at normal room temperature of 20.15 ± 1.27°C, referred to as the control group. Birds of both the groups were supplied with their usual food and water during the course of these experimental studies.

Observations on the experimental birds were made in batches of 6, at an interval of 24, 48, 72 and 96 hours, respectively. Observations on the control group were also made simultaneously at the rate of 5 birds each time and values for all the birds of control group were pooled later on to obtain the mean value.
Blood Glucose & Cholesterol of *G. domesticus*

**Table:** Relative variations (%) in blood glucose and cholesterol values of *Gallus domesticus*, following temperature variation, based on the values as given in text figure.

<table>
<thead>
<tr>
<th>Components</th>
<th>Glucose</th>
<th>Cholesterol</th>
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<tbody>
<tr>
<td>Control : 24 hour</td>
<td>-9.10</td>
<td>-10.92</td>
</tr>
<tr>
<td>Control : 48 hour</td>
<td>-3.94</td>
<td>-8.80</td>
</tr>
<tr>
<td>Control : 72 hour</td>
<td>+0.98</td>
<td>-11.63</td>
</tr>
<tr>
<td>Control : 96 hour</td>
<td>-14.72</td>
<td>-15.16</td>
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</table>

**Total blood glucose:** Total blood glucose level declined by 9.1% (Table) during first 24 hours of the experiment than the control value of 247.55 ± 24.00 mg. (Fig.). This value improved by 48th hour. The value reached to a maximum level by 72nd hour, being 250.00 ± 10.64 mg. It declined further and by the end of 96th hour its minimum value of 211.11 ± 11.11 mg. was recorded (Fig.).

**Total blood cholesterol:**
The total blood cholesterol value showed a fall during this experiment (Fig.). A minimum value was noted at 96th hour of the experiment being 200.00 ± 17.32 mg.

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Fig.—Blood glucose and cholesterol values of *Gallus domesticus*, following a sudden change in ambient temperature. The small bars represent ± standard error.
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REFERENCES


