Biochemical studies of fish tissues are of considerable interest for their specificity in relation to the food values and for evaluating their physiological needs at different periods of life. Increase in body size may, of course, changes the chemistry of the fish, but phenomenon seen in larger specimens, sometimes result from the onset of sexual maturity and it is not always possible to distinguish between the two factors (Love, 1970). The metabolic processes increase considerable during pre-monsoon period when they prepare themselves for spawning (Tandon and Joshi, 1974). Studies on changes in biochemical composition in fishes have been made variously in relation to body size, sex, season and pollution etc. but there is a pertinent question whether all the tissues of fish body possess similar biochemical constituents or there is considerable variations in these parameters. Therefore, in the present work an attempt has been made to know the changes, if any, in biochemicals constituents of various body tissues in Labeo rohita (Ham.).

MATERIALS AND METHODS

Larvae and adults of both the live specimens of Labeo rohita (Ham.) were procured through local fish dealers at Siwan. They were transported to the laboratory in big glass container and were kept in big cemented tank fitted with aerator for proper acclimatization in the laboratory for about a week. The unhealthy/diseased/infected fishes were discarded and the healthy fishes were washed in 0.5% KMNO₄ solution for about 30 minutes to get rid of ectoparasites, if any. In the laboratory they were fed daily (ad libitum) with fish meal (purchased from local marked). Fishes of 110±1.5g were used in the present study. The details of the methods employed in the determination of water, protein, lipid content and carbohydrates in different tissues of Labeo rohita (Ham.) were those as followed by Alok and Mistry (2013), Prasad and Kumar (2013), Bharti and Fatah (2016) and Kumari and Yasmin (2016).

RESULTS AND DISCUSSION

The data showing water, protein, lipid and carbohydrate (%) in liver, kidney and ovary of Labeo rohita have been presented in Table 1. Water content was maximum in kidney and minimum in liver while maximum protein and lipid content (%) was recorded in liver.

The perusal of Table 1 indicates that different fractions of biochemical constituents are not uniformly distributed amongst various tissue of the body rather these constituents are different in different tissues of the body, depending upon their various physiological role.

Biochemical contents are essential constituents of all living beings. They not only serve as fuel (at the hour of need) to yield energy but also play vital role in every aspects of structural and functional characteristic of the living organisms because they are essential constituents of the protoplasm which form the physical basis of life. The protein and other biochemical constituents such as water, carbohydrate and fat or lipid in the body of fish do not remain constant. They are subject to change at different times under different ecophysiological conditions and in different fish species. A perusal of literature indicates that except some fragmentary report (Chaturvedi et al. 1976, Prasad et al. 1983, Roy and Kumar, 2011 and Alok and Mistry, 2013) there are scanty report on biochemical composition in different tissues of Indian fresh water fishes. During pre-spawning period the mass of the genital products may constitute upto 30% of the total body weight of fish.
HUSSAIN AND AHMAD (228)

The energy demands associated with reproduction may exceed the energy supplied by the food. The seasonal changes in water, fat and protein contents of muscle and liver in several fishes have, therefore been related to growth of gonads and other process associated with spawning (Dawson and Grim, 1980).

Thompson (1977) observed that the protein content was higher in the testes of ripe male Scallop, Placopecten magellanicus. Pandey et al. (1981) in Anabas testudineus, observed that during breeding months the lipid percentage was less than non-breeding months and non-lipid percentage was higher during breeding months than non-breeding months. Prasad et al. (1983), while studying the biochemical composition in certain tissues of Macrignonathus aculeatum, reported that the water contents were 55.0, 78.0, 89.96, 85.15 and 89.3 in liver, muscle brain, kidney and gonad (ovary) respectively. The protein contributed 20.0, 1.0, 13.5, 14.69 and 14.57%, respectively in these tissues. Chaturvedi et al. (1976) have reported 55.8, 68.6, 62.7 and 53.2% water in liver, gonads, red muscle and white muscles, respectively in female H. fossilis during pre-spawning period.

Yashmin (1988) reported water content to be 79.36, 76.32, 73.94, 74.02% in brain, kidney, liver and muscle respectively in H. fossilis. The protein content was 19.01, 20.74, 21.78, 21.42% in brain, kidney, liver and muscle respectively in H. fossilis while calorific values during pre-spawning period in brain, kidney, liver and muscle were 5.281, 5.484, 5.776 and 5.536 k.Cal/g of dry weight, respectively. Our findings in the present study are consistent with the findings of Prasad et al. (1983) and Yashmin (1988). Maximum calorific values and protein in A. testudineus are found in liver and muscles (Kumari and Yasmin, 2016). The report of Alok and Mistry (2013) in Channa punctatus (Bloch) are similar.

REFERENCES

10. Prasad, S; B.N. Pandey and D.P. Sinha (1983). Seasonal variations in fat and water content of the Indian fresh water mud eel,

Table 1: Showing regional distribution of biochemical constituents in some important tissues in relation to body weight in Labeo rohita (Ham.); N=6; Sex-Mixed.

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Weight range</th>
<th>Water content %</th>
<th>Lipid %</th>
<th>Protein %</th>
<th>Carbohydrate %</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Liver</td>
<td>Kidney</td>
<td>Ovary</td>
<td>Liver</td>
</tr>
<tr>
<td>1</td>
<td>70.80g (Av. 77.5g)</td>
<td>72.4</td>
<td>78.6</td>
<td>75.4</td>
<td>5.0</td>
</tr>
<tr>
<td>2</td>
<td>120-133g (Av. 128g)</td>
<td>67.6</td>
<td>71.8</td>
<td>72.9</td>
<td>9.4</td>
</tr>
<tr>
<td>3</td>
<td>349-355g (Av. 349g)</td>
<td>62.4</td>
<td>70.8</td>
<td>70.4</td>
<td>11.8</td>
</tr>
</tbody>
</table>
Macrognathus aculeatum. Z. Tierphysiol. 49 : 117-126.


