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VARIATION OF CARBOHYDRATE IN THE OVARY OF MURRELS (*CHANNA* SPP.)

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Seeing the medicinal food value and ornamental aquarium fisheries *Channa* sp. has become a choice for study. Present paper deals with the variation in quantity of glucose and glycogen during the ovarian cycle. These two component vary considerably from 1 to 4 stages of maturation of ovary, both were in the stage 2 and lowest in stage 4 in all the four species of the *Channa*; *viz C. punctatus*, *C. marulias*, *C. striatus* and *C. gachua* during observation on maturation, it was observed that glycogen contents were always more than amount of glucose present in ovaries of any four species of *Channa*.

Key words : Carbohydrate, ovary, *Channa*.

INTRODUCTION

Carbohydrate supply the major portion of daily energy requirement of the normal individual, they are oxidized as a source of energy, converted glycogen supply the carbon chain for certain amino acids are converted into fat. Glycogen may have both, a functional and a storage significance. The role of carbohydrate is classified by Dorairaj (1962), Sidwell *et al.* (1974), Chaturvedi *et al.* (1976), Hislop *et al.* (1978), Joshi *et al.* (1979), Taneja *et al.* (1990), Amita Saxena (1991, 2002 & 2004), Gracia *et al.* (1993) and Sarasquete *et al.* (2002).

MATERIALS AND METHODS

Live *Channa* spp. were collected from the local water resources. Immediately after collection fish were sacrificed to dissect the ovaries. These were weighted to the nearest milligram and transferred to crusted ice. Glucose was estimated by the method of Somogy (1945) cited by Oser (1971) and glycogen by the method of Kemp & VanHeifnigen (1954).

RESULTS AND DISCUSSION

The accumulation of energy rich carbohydrates like glycogen is considered to be of prime importance to ensure later development in a medium which is devoid of essential nutrients (Amita, 1991). Observations on the glycogen contents of the ovary during growth as well as in the post spawned condition showed fluctuations. The accumulation of energy rich compounds started in the ovary at immature stage (I) and reached to a maximum in stage II, the maturing stage. The decrease in glycogen during the mature and spent stages indicated that a transfer from the ovary to the extruded eggs had been taken place. However, not all the eggs were extruded. In *Channa punctatus*, during stage I when the ovary builds up glycogen, reserves in the liver and muscle show depletion (Amita Saxena, 1991). The increase in glycogen content in the ovary during stage I was 0.325 to 0.026 to

1.624 ± 0.124 of the ovary. Hislop (1979) found that feeding of cod during gonad maturation affected the quality and quantity of the eggs, an ample amount of balanced food could enhance the weight of maturing cod females. It seems likely that the depletion of the body constituents during gonad formation in *Channa striatus* could be heavily influenced by the food quality eaten by the fish. The present study revealed a variation in glycogen and glucose in the ovary and during the ovarian cycle that would affect ultimately, the egg consumption. A factor which has to be seriously considered for offspring survival and vitality. It seems reasonable to conclude that a *Channa* sp. population in the freshwater river in rainy season *i.e* overfiowing of water causes a rigorous biochemical change in reserve food energy. These stored substances may affect vitality of the offsprings. In order to get better improved offsprings, it is necessary to provide balanced diet at the time of ovarian development.

Table I : Changes in glucose constituents of the ovary during the ovarian cycle.

Species	Stage I	Stage II	Stage III	Stage IV
C. punctatus	0.432 ± 0.026	0.662 ± 0.024	0.466 ± 0.024	0.298 ± 0.013
C. marulias	0.542 ± 0.290	0.784 ± 0.240	0.572 ± 0.200	0.320 ± 0.200
C. striatus	0.502 ± 0.270	0.694 ± 0.260	0.462 ± 0.240	0.321 ± 0.210
C. gachua	0.428 ± 0.260	0.686 ± 0.280	0.482 ± 0.210	0.302 ± 0.200

Table II : Changes in glycogen constituents of the ovary during the ovarian cycle.

Species	Stages I	Stage II	Stage III	Stage IV
C. punctatus	1.624 ± 0.124	4.622 ± 0.312	2.640 ± 0.210	0.426 ± 0.028
C. marulias	1.213 ± 0.864	4.014 ± 0.228	2.023 ± 0.222	0.316 ± 0.220
C. striatus	1.946 ± 0.202	4.924 ± 0.372	2.840 ± 0240	0.620 ± 0.040
C. gachua	1.284 ± 0.940	4.024 ± 0.382	2.480 ± 0.148	0.382 ± 0.200

Sidwell *et al.* (1974) studied the carbohydrates along with protein, fat, moisture and ash in 154 edible fishes showed the similar results as author noted. Taneja *et al.* (1992) postulated that a zinc deficiency during the ripening of ovary inhibitory effect on the previtellogenic oocytes from oogonia, suppressed their growth restricted protein and carbohydrate yolk deposition in vitellogenic oocytes and carbohydrate yolk deposition in vitellogenic oocytes and induced defects in egg membrane in post vitellogenic oocytes.

Gracia *et al.* (1991) noted that the kinetics of fructose 1.6 bisulphate from liver and gonads of sea bass in their second spawning season when fed on normal carbohydrates, a high carbohydrates, low protein showed liver enzyme activity was higher in female. It was even higher than found in ovary. Diet composition did not significantly alter enzyme activities in male liver and testes. Sarasquete *et al.* (2002) stated that vitellogenic oocytes undergoing maturation process. During this period both postovulatory follicles can be distinguished in ovary carbohydrates, lipids, protein and specially rich in tyrosine and tryptophan as well as phospholipids, glycolipids detected from oocytes with the presence of sugar residue.

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