

**Gonadotropin (GtH) and steroid hormones in the plasma and pituitary of *Mugil capito* at various states of maturation**

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Fish (*Mugil capito*) was collected from a fresh water fish farms, raised in a pond up to the age of 2 years weighing between 118 and 408 g, were brought to the laboratory and stocked in a fiber glass tanks at room temperature. The experiments were conducted through out a year.

Blood samples were taken from all fish from a caudal vein with a heparinized syring, the blood was centrifuged for 10 minutes at 6000 Rpm, at 4°C. The plasma was collected and kept frozen until use for GtH, testosterone and progesterone - RIA determination. Fish weighed and killed by decapitation. Pituitaries homogenized in 0.5 ml of Tris-HCl buffer pH. 8.6 and stored frozen in preparation for radioimmunoassay. The gonads were removed and weighed. The classification of gonads was used to assess the degree of development (ZAKI and EL-GHARABAWY, 1991). In addition, the various developmental stages were related to gonadosomatic index (GSI; gonad weight as expressed as a percentage of gutted body weight).

Plasma and pituitaries were extracted and assayed for gonadotropin by a radioimmunoassay (RIA) procedure using (ICN Biomedicals, Inc. Diagnostic Division, Cat. no. 07 - 156102).

Plasma and pituitaries were extracted and assayed for testosterone and progesterone by a radioimmunoassay (RIA) procedure using pantex immunocoat -<sup>125</sup>I- Cat. n°335 for testosterone and Cat. n°337 for progesterone.

The aim of the present study is to determine gonadotropin and testosterone content in plasma and pituitary. Besides the determination of progesterone in plasma for both sexes of *Mugil capito* all over the year. To give us the changes which occur during the sexual cycle.

Plasma and pituitary gonadotropin levels, testosterone and progesterone were measured using radioimmunoassay during the maturation stages. The seasonal variation in plasma gonadotropin concentration for *Mugil capito* was examined in relation to sexual maturation. Plasma GtH values reached minimum in immature male and female *Mugil capito*. Sexual maturity of both sexes was related to significant increase in plasma gonadotropin with the highest values observed for males near the times of spermiation.

Pituitary GtH content was lowest in immature, mature, nearly ripe and spent stages of male and female *Mugil capito* with an increase in ripe female *Mugil capito* collected in December. During the spawning season (October-February) mature female *Mugil capito* had plasma progesterone content higher than that found in sexually mature male *Mugil capito*. In female *Mugil capito*, a decrease in plasma testosterone levels occurred around the time of ovulation which was accompanied by a sharp rise in plasma GtH levels. Seasonal increase in plasma testosterone levels occurred around the time of ovulation which was accompanied by a sharp rise in plasma testosterone appeared to be involved in the ripe male *Mugil capito*. The increase in plasma testosterone levels in ripe male and in pituitary testosterone in female *Mugil capito* is highly correlated with the increase in gonadosomatic index.

**Spermatogenesis and induced spawning of male *Mugil capito* reared in fresh water fish farm**

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The testis of *Mugil capito* is of the percid type. The testicular tissue of *Mugil capito* is classified into six stages: In mature, mature prespawning, spawning, spent and resting stage. The testis of *Mugil capito* undergoes regular cyclic changes.

Males of *Mugil capito* were collected monthly from aquatic region; Boughaz lake Edku representing the testis under natural condition of spawning; from Nozha hydrodrome (fresh water fish farm) and from Damista fish farm (brackish water). total length, total weight, stage of maturity and the date of capture were recorded. Their abdominal cavity was opened and the testes removed, fixed in Bouin's solution. After that the gonads were dehydrated, cleared and embedded in paraffin. Six mm thick sections were stained with eosin and haematoxyline and iron haematoxyline. For the induced spawning, *Mugil capito* males, up to the age of 2 years (weight: 118 to 408 g.), were brought from a pond to the laboratory and stocked in a fiber glass tanks at room temperature. Males kept at 18° C and under photoperiod (12 L: 12 D) received and injection of GtH (1500 IU/Kgm.) as first dose and (2000 IU/Kgm.) as a cumulative dose. After hormonal stimulation, the milt was collected after the first and second injection. Milt volume, sperm count were measured after injections using the technique of Mosselios (1951).

The aim of the present work is to describe spermatogenesis to give us information about seasonal changes in the reproductive cycle of *Mugil capito* and also to determine the quantity and quality of spermatozoa produced by the injection with chorionic gonadotropin hormone, which is essential for artificial fertilization of this fish species.

The spermatogenic activity starts in late August and gradually increases till October, reaching maximum in late October and November. The process of spermatogenesis decreases and almost ceases by March, the testis passes through a resting period from April to late August. The activities of spermatogenesis were affected by slight increases in temperature.

In *Mugil capito*, asynchronous entry of the primary spermatogonia into the reproduction period, results in formation of the additional portion of spermatozoa. On the other hand, prolonged spawning in *Mugil capito* is enhanced.

After hormonal stimulation, the quantity and quality of spermatozoa which produced from *Mugil capito* are measured. It shows that the volume collected is maximum after 48 hr. (cumulative dose 2000 IU). After three days the mean volume of milt is decreased and none could be collected after four days. The number of sperm collected after injection with cumulative dose (2000 IU GtH) is more than those collected after injection with one dose of cGtH (1500 IU).

