GONADOTROPIN AND STEROID HORMONES IN THE PLASMA AND PITUITARY GLAND OF *OBLADA MELANURA* AT VARIOUS STAGES OF MATURATION

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Abstract

Ovulation and spermiation in *Oblada melanura* are accompanied with an increase of the GTH concentration in the blood plasma. Average plasma GTH content decreases rapidly in both sexes for the spent fish; there was little or no increase during the early stages of sexual maturity (Stage I,II and III of maturity). The concentration of GTH in the pituitary gland was highly correlated with that of GTH in the plasma. The average plasma testosterone hormone level in both sexes was highly correlated with the gonadosomatic index (GSI). The value of plasma's testosterone for the female was lower than in male. Plasma progesterone in female *O. melanura* reached its maximum value in the spawning season and was highly correlated with the increase in GSI. Spawning females had higher plasma progesterone content than the spermiating males during the spawning season. The plasma progesterone concentration was higher in females throughout the whole year.

Keywords : Oblada melanura, gonadotropin , testosterone, progesterone

Introduction

Sex steroids are variably attached to plasma's transport of proteins. Naturally, the most common female hormones are 17B estradiol and progesterone.The gonadotropic potency of the pituitary gland increases during gonadal recrudescence, reaching a peak at the time of reproductive maturity. It is not clear whether an increase in plasma gonadotropin (GTH) induces spermiation in fish (1). In salmonids, sex steroid dynamics (Testosterone,estradiol, progesteron) and their cocentration in plasma in relation to gonadal maturation were studied (2). In striped mullet, *Mugil cephalus* both testosterone and estradiol-17B were highly correlated to oocyte growth (3).

Material and methods

Sampling was carried out three times during a month, The fish *O. melanura* were collected from Kayet Bay and offshore stations, there were collected 600 specimens ranging between 9.5 to 25 cm. in length. After acclimatization, blood was collected. Pituitaries were homogenized in 0.5ml of Tris-HCl buffer pH. 8.6 and stored frozen. The gonads were removed and weighted to record the degree of the maturity. The analysis was based on the Radioimmunoassay (RIA) procedure, ICN chorionic gonadotropin hormone Iodine 125 Kits no."07-156102" were used to measure the level of GTH in plasma and pituitary gland; Pantex testosterone and progesterone 125 Iodine Kits number 335 and 337 were also used. Statistical analysis was carried out in order to compute and analyze the variance and significance of the results.

Results

The fish has a long spawning period, extending from early May to late July.

***Gonadotropin hormone (GTH) in plasma of female and male* O. melanura :**

Ovulation and spermiation in *O. melanura* are accompanied by an increase in plasma GTH concentration. This is depicted by the high statistical significance throughout the year ($P<0.01$). Average plasma GTH content rapidly decreases in both sexes of the spent fish as the high significance indicates throughout the year ($P<0.1$). There was little or no increase during the early stages of sexual maturity (Stage I,II and III of maturity).

***Gonadotropin hormone (GTH) in pituitary gland of female and male* O. melanura :**

Ripe and spawning fish have a maximum concentration of pituitary GTH .The average value of the content significantly decreases in the spent fish. There was little or no significantly increase during the period from late September to April.

***Testosterone hormone in plasma of female and male* O. melanura :**

The average level of the plasma testosterone in both sexes was highly correlated with GSI and reached the maximum value during spawning. The average value of testosterone concentration rapidly decreases significantly in both sexes of the spent fish($P<0.1$). The plasma testosterone value in the female was lower than in male

***Progesterone hormone in plasma of female and male* O. melanura :**

Plasma progesterone in *O. melanura* reached its maximum value during spawning season and was highly correlated with the increase in GSI. Progesterone content rapidly decreases. The average value of both sexes for spent fish ($P<0.1$)). The plasma progesterone concentration was higher in females throughout the whole year.

Discussion

In all teleosts studied so far, oocyte maturation and ovulation are accompanied by a significant increase of the pituitary and plasma gonadotropin levels (4).

The increase in plasma and pituitary GTH in both sexes of *O. melanura* is highly correlated with the increase gonadosomatic index. These results are in agreement with previous studies on male and female *Mugil capito* (5). The GTH increase might have a physiological significance in relation to the preparation of spawning : A similar increase occurred in male along with the presence of ovulated and active female as in the *Oncorhynchus keta* (6) . The increase in plasma testosterone for both sexes of *O. melanura* is highly correlated with the increase in GSI. These results are in agreement with those of the brown bullhead catfish (7).

The maximum value of the plasma progesterone in female fish has been observed during May, with a slight decrease during the spawning season. The present results are in agreement with those for Salmonids (8) .

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