CIRCANNUAL VARIATIONS IN PLASMA LEVELS OF UNCONJUGATED AND CONJUGATED TESTOSTERONE AND ESTRADIOL-17β IN FEMALE *CIRRHINUS MRIGALA* (Ham.)

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Introduction:

Estradiol-17β has been identified in the plasma of many female teleost fishes and its role in the synthesis and secretion of hepatic vitellogenic protein is well established It has been reported that teleost gonadotropin directly stimulated estradiol-17β production by early vitellogenic ovarian follicles of amago salmon, *Oncorhynchus rhodurus.*The present study was conducted to obtain scientific knowledge on the relationship between seasonal pattern of plasma levels of testosterone and estradiol-17β and their conjugated forms (glucuronides and sulfates) in *Cirrhinus mrigala* and also for further studies on the mechanisms controlling steroidogenesis in this species. This is the first investigation in any major carp *Cirrhinus mrigala* (Ham.) showing the relationship between glucuronide and sulfate sex steroid hormones measured by enzyme linked immunoassay (ELISA) during annual reproductive cycle.

Methods:

Adult experimental female fish of *Cirrhinus mrigala* was collected during each phase from a pond cultured by a fish former Banrahia Bagh, Gaura Badshahpur, Jaunpur fish farm fish and was bled by caudal incision. Blood was collected in heparinized glass culture tubes. The blood was centrifuged at 4000 rpm for 15 minutes in a refrigerated centrifuge at 4^0C.The plasma was separated and kept -20^0C till further analysis of conjugated and unconjugated steroids. The ovaries were dissected out and gonadosomatic index (GSI) was calculated as total gonad weight / Body weight × 100 Extraction of unconjugated and conjugated sex steroid hormones was followed as per methods described [1]. Extraction of free, glucuronides and sulfate steroids was assayed for various hormones by ELISA Kit.

Result and Discussion:

Plasma levels of TF were high during prespawning phase and declined its level in the rest of phases. The

Fig; 1 Seasonal profile of Gonadosomatic index (GSI) and testosterone free (TF), testosterone glucuronide (TG), and testosterone sulfate (TS) during different phase of annual reproductive cycle in fresh water female major carp, *Cirrhinus mrigala* (Ham.). Analysis of variance two way (ANOVA-TW); GSI, Phase, F: 65535, P < 0.001, GSI, 99.35, < 0.001, Phase × GSI, F: 65535, < 0.001, Testosterone F: 21.25, P < 0.001, Hormone, F: 142.87, P < 0.001, Phase × Hormone, F: 8.86, P < 0.001

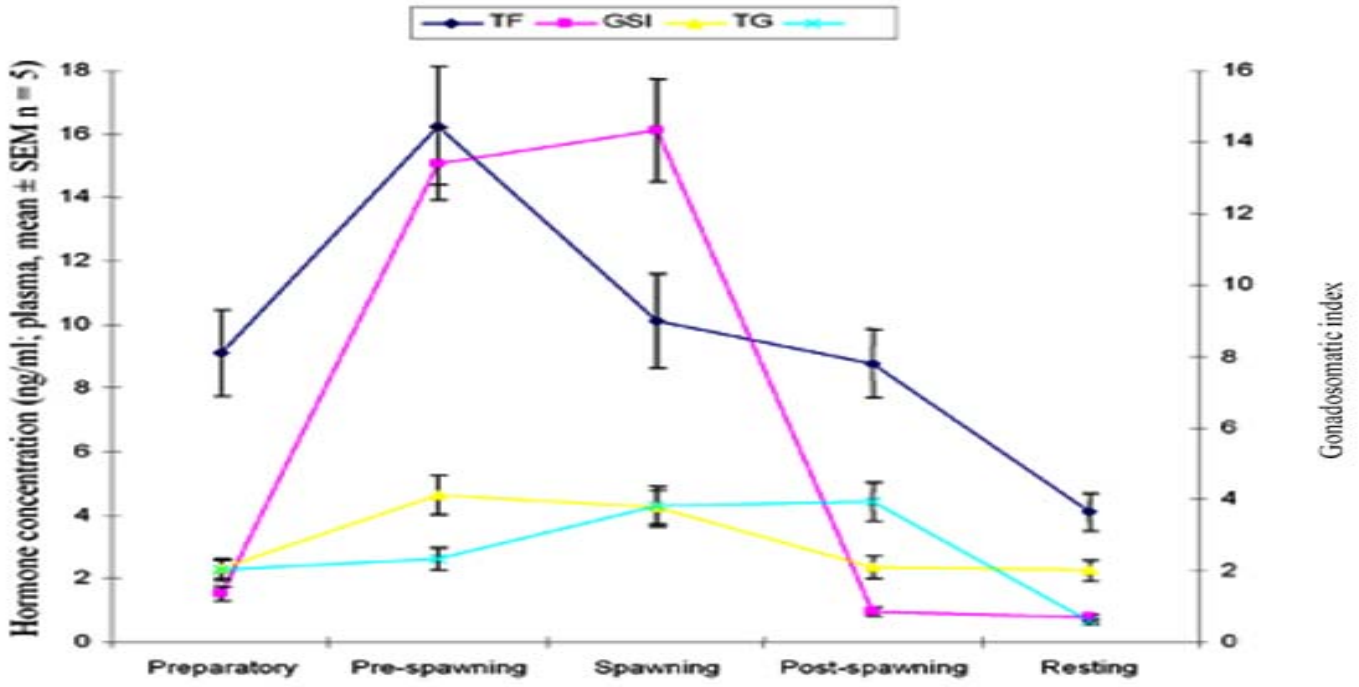
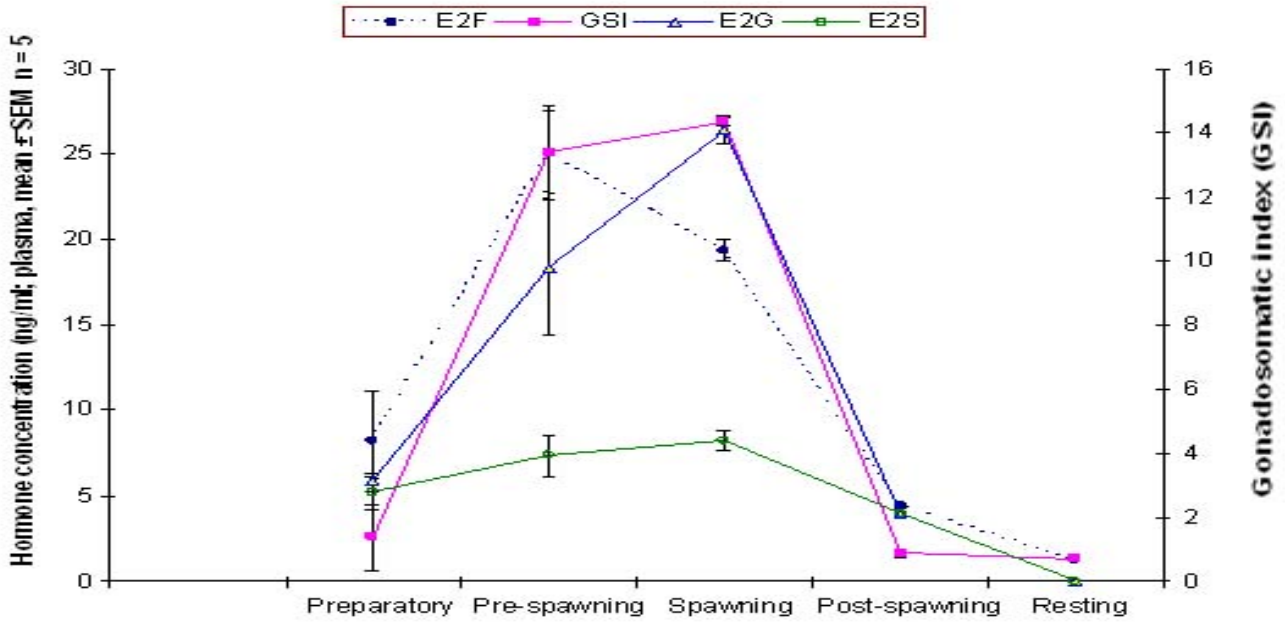


Fig: 2 Seasonal profile of Gonadosomatic index (GSI) and estradiol-17β free (E2F), estradiol-17β glucuronide (E2G) and estradiol-17β sulfate (E2S) during different Phase of annual reproductive cycle in fresh water female major carp, *Cirrhinus mrigala* (Ham.) Analysis of variance two ways (ANOVA-TW); GSI, Phase, F: 65535, P < 0.001, GSI, 99.35. P < 0.001, Phase × GSI: F, 65535 P < 0.001 estradiol-17β Phase F: 42.90, P P < 0.001, Hormone, F: 13.82, P < 0.001, Phase × Hormone, F: 7.45, P < 0.001



level of TG was high during prespawning phase and declined its level in the rest of phases the plasma levels of TS and TG were approximate same during the pre-spawning phase and. Plasma levels of E2F was high during prespawning phase where as E2G was declined during spawning phase . Analysis of variance indicated that gonadosomatic index has correlations with free steroids in this species. Result indicated that production of conjugated sex steroids which play important role in the pheromonal behavior and spawning in the freshwater carp, *Cirrhinus mrigala* (Ham.) during annual reproductive cycle of this species.

Conclusion:

These Results indicated that production of conjugated sex steroids which play important role in the pheromonal behavior and spawning in the freshwater carp, *Cirrhinus mrigala* (Ham.) during annual reproductive cycle of this species as have been reported earlier [2,3].

References:

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