

SEX STEROIDS IN MALE *DIPLodus SARGUS* IN EGYPTIAN MEDITERRANEAN WATERS

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Abstract

The annual reproductive cycle and variations in plasma sex steroids levels were studied in male white seabream, *Diplodus sargus*. The gonadosomatic index (GSI) and plasma testosterone (T), estradiol (E2) and progesterone (P) levels were measured T and E2 were correlated positively with the GSI, with their maximum reached at spawning season. In contrast, P levels attained the highest value at the pre-spawning period followed by a sharp decrease during spawning.

Keywords: Sparidae, *Diplodus sargus*, Reproductive cycle, Sex steroids

Introduction

White seabream, *Diplodus sargus* is considered to be one of the common and commercially important Sparidae along the Egyptian Mediterranean waters. However, there is lack of knowledge on its reproductive endocrinology. The present study examined the plasma steroid profile, in relation to testis size, in male white sea bream, during the natural annual reproductive cycle.

Materials and Methods

Fish used in the present study were captured alive three times a month from the Mediterranean Coast near Kayet Bey Castle at Anfoushy region, Alexandria, Egypt. Sampling was conducted from September 1996 to August 1997.

Blood samples were collected from the caudal vessels for steroid determination. After centrifugation, plasma was drawn off and stored at -20°C until analysed. Following blood sampling, the gonads were excised and weighed for the determination of gonadosomatic index (GSI = gonad weight/body weight x 100). Steroids were determined using radioactive iodine I¹²⁵ kits assembled in U.S.A. by diagnostic system laboratories, and counted by gamma counter.

Results and Discussion

Gonadal maturation in fish is regulated by the endocrine system, accompanied by dynamic changes in the serum steroid levels. Levels of androgens and estrogens exhibit clear variations from one month to another throughout the annual reproductive cycle.

The present study showed that there was a positive correlation between the GSI and the plasma testosterone (T) levels in male white seabream ($P < 0.001$). Both GSI and T increased gradually in the pre-spawning period, reaching the maximum values during the spawning season, followed by an obvious decrease in the spent and recovery periods (Fig. 1). This is in general agreement with that observed for several other species, such as *Carassius auratus* (1), *Salmo trutta* (2), *Oblada melanura* (3), and *Diplodus vulgaris* (4). The present study showed that plasma progesterone (P) levels in males decreased with spawning. This is also true of rainbow trout (5). P is also known to stimulate spermiation in male goldfish (6).

Plasma estradiol (E2) levels increased gradually from the beginning of the breeding season reaching their maximum at the pre-spawning period. The E2 levels were correlated with the GSI ($P < 0.001$). The results for E2 are in accordance with those for *Diplodus vulgaris* (4) and *Rhabdosargus haffara* (7) where the level of E2 reached its maximum in the pre-spawning period, then decreased throughout the spawning season to reach a minimum value for spent male.

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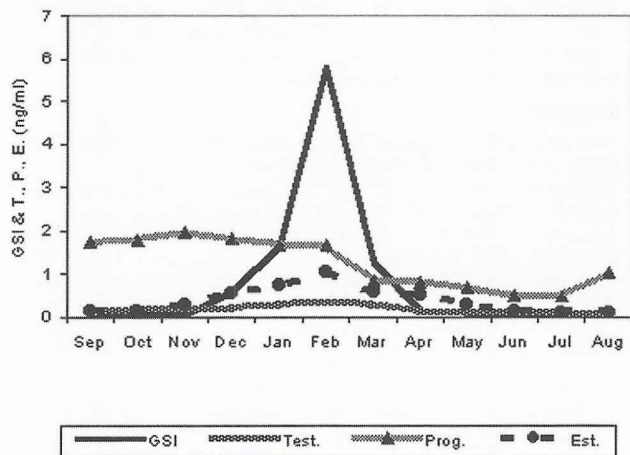


Fig. 1. Sex steroids in male *Diplodus sargus* in Egyptian Mediterranean waters.