

INTRODUCTION

Sand goby (*Oxyeleotris marmoratus*, Bleeker) is known as the largest fish in the group of gobiidae and inhabits natural freshwater marshes. It is so far one of the most important cultured species as food fish in Asia (Department of Fisheries, 2002). However, the number of sand gobies is reducing due to the deterioration of their habitat. In addition, breeding and fingerling hatcheries are very few, due to lack of information concerning its reproductive physiology and endocrinology. Thus, the study about reproductive physiology and endocrinology will help to understand the fundamental mechanism involved in sand goby reproduction and improve sand goby aquaculture.

It is well known that gonadotrophs of the pituitary gland play an important role in stimulating gonadal maturation. A number of teleost fishes, e.g. chum salmon (*Oncorhynchus keta*) (Suzuki *et al.*, 1988 a,b; Kawauchi *et al.*, 1989), coho salmon (*Oncorhynchus kisutch*) (Swanson *et al.*, 1991) and Japanese eel (*Anguilla japonica*) (Yoshiura *et al.*, 1999) demonstrate that the pituitary gland contains two distinct gonadotropic cell types which produce chemically distinct two gonadotropins: GTH I (FSH like) and GTH II (LH like). In rainbow trout, the GTH I (FSH like) gonadotrophs are found in greater number in immature fish, whereas in mature fish the GTH II (LH like) gonadotrophs dominate (Nozaki *et al.*, 1990; Naito *et al.*, 1991). Therefore, it has been suggested that GTH I and GTH II possess different functions. The studies in salmonid fishes have proposed that GTH I contributes to early spermatogenesis and follicular growth, whereas GTH II encourages the maturation of gametes and is implicated in spermiation and ovulation (Planas *et al.*, 1993; Tyler *et al.*, 1991; Suzuki *et al.*, 1988c). Although two distinct GTHs have been identified in several fishes, there are a number of species such as the European eel (*Anguilla anguilla*) (Querat *et al.*, 1990), chinook salmon (*Oncorhynchus tshawytscha*) (Breton *et al.*, 1978), tilapia, (*Oreochromis mossambica*) (Farmer & Parkoff, 1977), and the African catfish (*Larias gariepinus*) (Koide *et al.*, 1992; Schulz *et al.*, 1997), in which LH but not FSH was found. A single GTH is referred as maturational GTH.

The present study aim focuses on the alteration of the gonadotropes throughout the annual reproductive cycle to identify the gonadotropic cell types and their functions by immunohistochemistry as a basis for the control of reproduction in sand goby. GTHs are composed of two protein subunits: α and β . The α subunit is common to follicle-stimulating hormone (FSH), luteinizing hormone (LH) and thyroid stimulating hormone (TSH), while the β

subunit confers specificity to each hormone (Pierce & Pearson, 1981). Therefore, the antisera used in this studies were anti-chum salmon GTH I β (FSH) and GTH II β (LH). These antisera have been used to identified GTH I β (FSH) and GTH II β (LH) gonadotrophs in several fishes, e. g. Pejerrey (*Odontesthes bonariensis*) (Miranda *et al*, 2001) and Nile Tilapia (*Oreochromis niloticus*) (Mousa & Mousa, 1999).