
ABSTRACT

Groupers are popular food fish farmed in South East Asia and have potential to become an important cultivable species owing to their fast growth, efficient feed conversion and high market price. Commercially important species contributing to the grouper fishery mainly includes *Epinephelus diacanthus*, *E. bleekeri*, *E. chlorostigma*, *E. malabaricus* and *E. tauvina*. A major bottleneck in the large scale onshore culture activities of groupers in our country is the lack of adequate number of hatchery produced seed of groupers since wild seed availability is highly fluctuating and unpredictable. In order to master controlled breeding and achieve mass scale production of seed of any cultivable fin fish species, an in depth understanding of the complex physiological changes that occur at intracellular and intercellular level in the fish body during the process of reproduction is inevitable. The gonads with the onset of maturation show a series of developmental changes, which are closely accompanied by the cellular, biochemical, and molecular changes. It is against this background that the present study has been taken up on the reproductive physiology of female grouper *E. diacanthus* which sustain one of the major demersal fisheries of our country. The study was carried out from collections of the fish onboard FSI vessel during the cruises off Quilon and off Ratnagiri region. In this study, the morphology of the female reproductive system has been described in detail followed by the detailed classification of maturity stages from stage I to stage III. Data on GSI (Gonadosomatic Index), HSI (Hepatosomatic Index), CF (Condition Factor), fecundity etc. have also been obtained and statistically interpreted. The detailed histology of oocytes and hepatocytes has been described through microscopic and ultra structural studies to understand inter cellular and intra cellular changes happening during oogenesis. In the ovary the occurrence of sex inversion has also been described. Through non denatured Native and denatured SDS-PAGE, the characterization of vitellogenin in ovarian homogenate and blood serum has been clearly elaborated. The molecular weight determination of vitellogenin protein fractions was worked out in the SDS-PAGE. To gather support data on the biochemical changes occurring during the maturation seven major parameters from four different tissues have also been studied. The information generated in this study along the above said aspects is expected to form a basis for initiating further studies on larger groupers.