

## The effect of male sperm and its pheromone to increase the maturity level of female gonad in tiger grouper (*Epinephelus fuscoguttatus*)

**Authors:**

**Apri I. Supii<sup>1,2</sup>,**  
**Diana Arifati<sup>2</sup>,**  
**Maheno Sri Widodo<sup>2</sup>,**  
**Yuni Kilawati<sup>2</sup>**

**Institution:**

1. Research and Development Institute for Mariculture (RDIM) Gondol-Bali, Indonesia.
2. Faculty of Fisheries and Marine Sciences, Universitas Brawijaya, Indonesia.

**Corresponding author:**

**Apri I. Supii**

**ABSTRACT:**

The aim of this study is to identify the pheromone in sperm and its effect on the maturity level of female gonad in tiger grouper. The methodology used in this study for sperm retrieval was tested for the steroid pheromones. LC-MS/MS is used to examine the element of pheromone in sperm. The sperms were given on some tiger grouper mothers by spraying it into the water tub (maintenance media). Each tub was filled with four tails of tiger grouper. The size of the mother fish used as a test-animal was 55 - 59 cm long with a weight of 4 - 4.5 kg. The doses of sperm used as the parameter in this study were 2 ml, 4 ml, and 6 ml. This male sperm and urine were sprayed at nights (7 PM). In this research, the design used was Complete Randomized Design (CRD). The observation of hormone profile in female blood plasma was performed by using ELISA method. A cannulation was also done to monitor the Gonad Maturity Level of female tiger grouper, and subsequently, the eggs obtained were processed (histology stage). The results of the analysis using LC-MS on tiger grouper sperm based on the appearing peak showed that the ion percussion was at the level of 255 ms and 273 ms. On the other hand, the ion products showed a number of 159F and 255F. This is also in line with massbank databases. There are two groups of steroid hormones viz., estrogen and androgens; present in the analysis, the estrogen is a 17 $\beta$ -Estradiol compound, while the androgens consist of androstenediol, epiandrosterone, epitiocolanolone, etiocholanolone, and androsterone. The visual observation showed that the female tiger grouper showed a positive response when they receive the sperm. The female fish is known to be more aggressive and have irregular swimming patterns. However, the appetite of the female fish is decreased. c The high estradiol hormone was related to the egg formation in female fish before the spawning season. From these results, it could be concluded that the male sperm of tiger grouper had a pheromone that could increase the stimulation and maturity of female gonad.

**Keywords:**

Sperm, Pheromone, Tiger grouper.