



Growth performance and sex ratio of *Channa striata* through immersion and bioencapsulation of Artemia with recombinant growth hormone

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Abstract. The aim of this study was to evaluate the effect of different doses of *r-ElGH* on both growth performance and sex ratio of *Channa striata* juveniles. The *r-ElGH* treatments were conducted in two experiments, each using a specific method. In the first experiment, using immersion method, four kinds of treatments were used: one was without salinity shocked and no hormone treatments (negative control); and the others were with salinity shocked and hormone treatments (0 mg/L (positive control), 2 mg/L (P1), 20 mg/L (P2)). In the second experiment, using artemia bioencapsulation method, five kinds of treatments were used: one was artemia without *r-ElGH*, BSA and NaCl (negative control), and the others were artemia with *r-ElGH*, BSA and NaCl (0 mg/L (positive control), 2 mg/L (P1), 4 mg/L (P2), and 6 mg/L (P3)). All treatments in both experiments were replicated three times. The results showed that the *r-ElGH* increases specific growth rate, absolute body weight and length, while it decreases feed conversion ratio and it does not affect sex ratios. Furthermore, the ratio of female to male was 1:1.5 at five months old.

Key Words: *Channa striata*, recombinant growth hormone, growth performance, sex ratio

Introduction. *Channa striata* (Striped snakehead) is one of carnivore freshwater fish of Channidae family and ordo Perciformes, an original species in Asia and Africa region (Nakkrasae et al 2015) which has high economic value because its price is relatively high at about IDR 40,000 - 70,000 kg⁻¹ (Directorate General of Strengthening Competitiveness of Fisheries and Marine Products, 2019). It occupies the top ten species of national household preference with 2.40 % consumption level per year in 2013 (Indonesia Directorate General of Domestic Trade, 2013), has firm and tasty flesh (Khanna, 1978; Mumtaziana et al 2013), and has a rich source of albumin 63-107 mg g⁻¹ from its body weight (Chasanah et al 2015). Therefore, this fish is one of potential commodities that need to be studied intensively regarding its production technology.

The main problem of current production technology is decreasing growth rate after three months old, from 1.3-3.0 to 0.3-0.9 mm day⁻¹ (Murugesan 1978; Boonyaratpalin et al 1985; Courtenay & Williams 2004; Mumtaziana et al 2013). Besides, the feed conversion ratio (FCR) was high (Hien et al 2016) and it takes more than 13.5 months to reach market-size (Murugesan 1978) and two years to reach the length of 30 cm, where it sexually matures (Talwar & Jhingran 1992). Then, particular studies to increase growth rate, improve the FCR, and observe the sex ratio are needed.

Growth rate in fish can be increased through applying recombinant growth hormone (rGH), which is derivative of growth hormone (GH). Previously, rGH is produced from the