



## Comparative Assessment of GnRH and LHRH on Artificial Insemination and Embryonic Development of Stinging Catfish, *Heteropneustes fossilis*

E.S.P. Ekanayaka <sup>a</sup>, W.S. Weerakkody <sup>b, \*</sup>, W.P.R. Chandrarathna <sup>c</sup> and K.H.M.A. Deepananda <sup>b</sup>

<sup>a</sup> University College of Anuradhapura, University of Vocational Technology, Sri Lanka.

<sup>b</sup> Department of Fisheries and Aquaculture, University of Ruhuna, Sri Lanka.

<sup>c</sup> National Aquaculture Development Authority, Sri Lanka

### Abstract

Freshwater Stinging catfish, *Heteropneustes fossilis* that have a supra branchial air breathing organ is one of the ideal commodity for aquaculture, due to omnivorous feeding habit and high survival capacity. Present study evaluates the potential applicability of commonly used hormones to induce breeding in fish GnRH (a complex of salmon GnRH and domperidone) and LHRH, comparing their efficacy when used on artificial insemination and embryonic development of *H. fossilis*. Wild caught *H. fossilis* were acclimatised to cement tanks for one-month before using them to induce spawning using GnRH and LHRH. Selected females (n=8) were with a total weight and length ranged from 22.4 ± 0.05 cm to 22.6 ± 0.05 cm and from 105 ± 0.65 g to 106 ± 0.57 g, respectively. And, males (n=16) were with a total length and body weight ranged from 21.3 ± 0.05 cm to 22.3 ± 0.05 cm and 85.6 ± 0.50 g to 85.8 ± 0.57g, respectively. Females and males were injected with LHRH at dosages of 30 IU/ 100g body weight and 15 IU/ 100g body weight, respectively. Another group of females and males (8 and 16 respectively) of the same length and weight ranges were injected with GnRH, at a dosage of 0.16mg /100g body weight and 0.08mg /100g body weight respectively. Each hormone was injected in two portions, and 2/3rds of the total dosage were given 8 hours after the first injection. After 8 hours from the second injection, eggs were collected by stripping the females, and they were fertilised with sperms collected by scarifying the males. Incubation of eggs was done at room temperature (27-28°C), and development of embryo were observed and photographed using an Oxin trinocular microscope. Successful spawning was observed in both experimental groups, and Chi-square test revealed no significant differences (p>0.05) in the rates of ovulation, fertilization and hatching between two experimental groups. However, ovulation rate and fertilization rate (100% & 92.8% respectively) were higher in LHRH injected fish than GnRH injected fish (90% & 79.6% respectively). Hatching commenced 24 hrs after fertilization and the development frequency and time and percentage hatchability of eggs were not significantly different (p>0.05) between two experimental groups. Hatchlings had a mean length of 2.3 ± 0.05 mm, and yolk was completely absorbed and exogenous feeding started within four days of hatching. Present study concludes that there is a



---

high possibility to enhance the seed production of *H. fossilis*, using GnRH and LHRH hormones, and LHRH being more effective over GnRH.

**Key words:** fertilization rate, GnRH, *Heteropneustes fossilis*, LHRH, ovulation rate

**\*Corresponding Author:** [sanjaya.fmst.uor@gmail.com](mailto:sanjaya.fmst.uor@gmail.com)