

Expression Pattern of Estrogen Receptors And Vitellogenin in Genistein Fed Male And Female Common Carp Brooders

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Abstract

Estradiol signalling is stimulated or inhibited depending upon the interaction mechanism of estrogen receptors, ER α and ER β . Soy-phytoestrogens, especially genistein, is known to bind these receptors and affect vitellogenin (vtg) synthesis. Fifty-six days of feeding trial was conducted to evaluate the effect of genistein on ER α , ER β and vtg gene expression in male and female brooders of *Cyprinus carpio*. Five groups of fishes were fed with 0 (C), 1 (G-1), 3 (G-3), 6 (G-6) and 9 (G-9) mg% genistein contained feed during the trial. mRNA concentrations in liver tissue were determined by relative analysis using real-time PCR. The study observed a significant vtg mRNA level reduction from G-6 in female and a significant induction in male fishes after G-6. Expression of ER α gene was showed an increasing trend up to G-6 in while ER β gene expression was reduced with increasing dose of genistein in female fishes. Higher ER α mRNA level was observed in G-3 and G-6 in male fishes, while ER β mRNA level was comparatively lower in male and showed no significant difference between the treatment groups. The study revealed that both ER α and ER β are sensitive to dietary genistein in female brood fishes than male. Genistein at 6mg%, so as soybean meal at 27% inclusion (considering genistein content of defatted soybean meal is 22.50 \pm 1.09 mg/100g) disrupts the estradiol cascade pathway by reducing the expression of ER β gene and vitellogenin synthesis in a female brooder of *C. carpio*. Genistein induces vitellogenin synthesis at 6mg% by inducing ER α gene expression in the liver of male brooder. Hence the investigation concludes that though the practice of soybean meal in aquafeed is inevitable; however, its inclusion in a brood-stock diet needs serious attention.

Biography:

Nuzaiba P. M. has completed her degree in fisheries science and specialised in fish physiology and Biochemistry. She has been involved in the fisheries sector for ten years and contributed her hardship in fish nutrition, nano delivery of nutraceuticals and feeds based endocrine disruption.

[13th World Congress on Aquaculture & Fisheries;](#)

Tokyo, Japan- August 17-18, 2020.

[Abstract Citation:](#)

Nuzaiba P. M., Expression Pattern of Estrogen Receptors And Vitellogenin in Genistein Fed Male And Female Common Carp Brooders, Aquaculture Asia Pacific 2020, 13th World Congress on Aquaculture & Fisheries; Tokyo, Japan- August 17-18,2020

<https://aqua.conferenceseries.com/abstract/2020/expression-pattern-of-estrogen-receptors-and-vitellogenin-in-genistein-fed-male-and-female-common-carp-brooders>

