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POSTER 035

THE EFFECTS OF TOTAL DIETARY FISH OIL REPLACEMENT BY PLANT OILS ON THE OXIDATIVE STRESS RESPONSE AND SEVERAL IMMUNE SYSTEM PARAMETERS IN NILE TILAPIA (*Oreochromis niloticus* L.)

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This study aimed at demonstrating the effects of total fish oil replacement by plant oils on the oxidative stress response and several immune system parameters in Nile tilapia (*Oreochromis niloticus* L.). Five iso-nitrogenous and iso-lipidic diets (34 % CP and 14 % CL on a dry matter basis) were formulated to totally replace Fish Oil (FO100) by sunflower seed oil (SF100), Canola Oil (CO100), Linseed Oil (LO100) and equal combination (FO25/SF25/CO25/LO25) of these vegetable oils. A total of 375 fish (32.5±0.5 AMBW) were randomly assigned to 15 190 l (130 l rearing volume) rectangular fiberglass tanks and fed 3 % BW/d two times in equal amounts both for morning (09:00-10:00 h) and afternoon feeding (17:00-18:00 h). Glutathione peroxidase (GSH-Px), Catalase (CAT), Malondialdehyde (MDA) and Super Oxide Dismutase (SOD) activity levels in liver were analysed to demonstrate the effects of plant oil replacement on oxidative stress response in fish. Myeloperoxidase (MPO), Lysozyme and Nitric Oxide (NO) activities were also measured to understand the immune functions of Nile tilapia fed dietary plant oils. Fish tripled its initial live weight after 90 day of growth period and there were no significant differences ($P>0.05$) between dietary groups. There were also no significant differences ($P>0.05$) in terms of GSH-Px, Lysozyme, MPO and SOD levels of fish fed different dietary treatment in this experiment. However, fish fed LO100 diet had significantly higher ($P<0.001$) CAT and MDA levels than that of fish fed the other dietary treatments indicating that high dietary α -Linolenic acid is prone to peroxidation leading to accumulation of MDA. Nitric oxide levels in fish fed diets SF100, CO100, LO100 and FO25/SF25/CO25/LO25 had also significantly higher ($P<0.001$) Nitric oxide levels than that of fish fed FO100 diet indicating that plant oils either replacing fish oil in diets individually or in combination with fish oil might behave as immuno-stimulant in Nile tilapia.

Keywords: Nile tilapia, growth, plant oil replacement, oxidative stress response, immune system