

EFFECT OF TWO DIFFERENT LIPID SOURCES AS A SUPPLEMENT ON THE GROWTH AND CHEMICAL COMPOSITION OF THE AFRICAN CATFISH (CLARIAS GARIEPINUS, BURCHELL 1822)

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Until now, different kinds of studies have been carried out to determine the lipid requirements for fish. For this purpose, many lipid sources were used in fish diets at different inclusion levels (Hernandez-Vergara et al., 2003; Bilgven, 1999; Akyurt and Erdoęan, 1994; Canyurt et al., 1991; Hanley, 1991). In general, fish oil has been used to meet the energy and essential fatty acids requirements of fish. In 1980's, especially rafination wastes of soy and sunflower oil (soapstock) were begun to use as an energy source in broiler and laying hens diets in Turkey (Sevgican et al., 1986) and thereafter, these plant oil wastes were examined in trout diets (Canyurt et al., 1991). In both studies, good results were obtained and more cheaper production was possible up to a definite inclusion level of soapstock for fish diets.

In the present study, olive pomace oil and non-acidulated soapstock were used to investigate the growth, some body indices and biochemical composition of the African catfish. Trout diet (2 mm) was used in both control and experimental diets. Experimental diets contained both two inclusion levels (3 and 9%, w/w) of olive pomace oil and soapstock. African catfish fingerlings (averaging 2,6 g) were used as the test animal and fed with control and experimental diets for 30 days. In the present study full randomized experimental design was applied. Ten fish were selected and stocked to each aquaria (80x40x40 cm dimensions) randomly. Fish were fed two times a day at the satiation level and aquaria were aerated continuously except feeding and cleaning times. At the end of the study, total liver and muscle lipid of fish were analyzed according to Bligh and Dyer (1959). For fatty acid analysis, samples were taken both muscle and liver and esterified according to Garces and Mancha (1993).

In the present experiment, there was no difference between groups with respect to growth, survival and some body indices statistically ($p>0.05$). At the end of the trial, both muscle and liver lipid contents of fish fed with lipid supplemented diets were lower than that of control treatment. However, total fatty acid contents of fish in all treatment increased compared to initial content of fish.

Generally, increasing lipid ratio in fish diets decreases feed conversion and this hypothesis have been supported by different studies. Akyurt and Erdoğan (1994) had used different four lipid sources in rainbow diets and all groups supplemented with lipid sources showed better feed conversion and weight gain compared to non-supplemented group. Also, Canyurt et al (1991) studied on the possibility of using soapstock in increasing rates for rainbow trout diets and showed that increasing level of 8% gave the best feed conversion and growth. It is very important to determine the optimum energy to protein ratio in fish diets for both growth and healthy fish. Optimum energy to protein ratio in their diets for young carp (Ogino and Satio, 1970) and canal catfish (Garling and Wilson, 1976) are 90 and for brook trout (Ringrose, 1971) and eels (Takeda et al., 1975) are between 125 to 150. Up to the a definite inclusion of lipids for salmon and trout improved the feed conversion and growth, but excessive dietary lipid affected the growth negatively (Austreng, 1986). Although; there was no difference between experimental groups statistically, in high inclusion level of lipids showed the lower growth, protein efficiency and higher feed conversions compared to control group. Only difference in experimental groups was body composition of fish. It was determined that lipid contents of both liver and muscles of fish fed diets supplemented with soapstock and olive pomace oil were lower than control group.

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