Effects of Dietary Replacement of Fishmeal by Soybean Meal on Muscle Lipids in Tilapia (*Oreochromis niloticus*) (Teleostei:Cichlidae)

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Currently, soybean meal (SBM) represents the protein source that most widely fulfils the possibility of partially substituting fishmeal in feeds for aquaculture. However, besides the physiological limitations existing in fish species related to SBM utilization, the substitution of high amounts of fishmeal by plant sources might suppose the eventual modification of the fillet lipid composition, given that: i) fatty acid (FA) profile of plant sources is clearly different from fishmeal; and ii) the close association between diet and fish body fatty acid profile.

Consequently, it is reasonable to question whether high level substitution of fishmeal by SBM might be reflected in the FA profile of fish muscle, specifically focused on PUFAs *n*-3 and *n*-6 contents. This question was assessed by distributing 60 tilapias (*Oreochromis niloticus*) in two experimental groups (fishmeal-based feed, 70% fishmeal; and SBM-based feed, 60% SBM). After 90 days, animals were sacrificed, and muscle lipids were extracted and analyzed. FA profile in fish muscle was compared with that obtained from experimental feeds.

The results indicate that final FA profile in fish muscle can be significantly modified by replacing most of the fishmeal by SBM in diets. Fishmeal-based feed showed higher contents in saturated fatty acids (SFA) and *n*-3 PUFA, and lower *n*-6 PUFA and total lipid compared to SBM-based diet. On the other hand, fish muscle in those animals fed on fishmeal-based diet showed higher contents in monounsaturated (MUFA), SFA, and total lipids, whereas those animals fed on SBM-based feed presented higher *n*-6 PUFA and total PUFA in muscle. No differences were found in *n*-3 PUFA. Differences were observed as well in relation to docosahexaenoic acid (DHA, 22:6*n*-3) and eicosapentanoic acid (EPA, 20:5*n*-3) in tilapia muscle owing to diets. Therefore, FA profile of tilapia muscle is clearly modified when fishmeal is replaced by high amounts of SBM in aquafeeds, and consequently, it is highly recommendable that this fact is taken into account in order to keep certain constancy in fish FA profile offered to markets.