

Sesamin addition to Fish Feed based on Plant Lipids Alters the Muscle Fatty Acid Composition in Rainbow Trout

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The increasing demand for aquaculture production makes it necessary to find new land-based raw materials to replace the depleting fish sources in aquaculture fish feed. One drawback with land based raw materials is the decreased amount of n-3 LCPUFA in the fish. This makes it interesting to study effects of minor feed components and their effect on fatty acid composition in the fish. It has been shown that sesamin, one of the major lignans in sesame seed oil affects the FA metabolism in mammals (Jeng and Hou, 2005).

The aim with this study was to investigate the effect of an equimixture of sesamin/episesamin supplementation in fish diets by using a two factorial design. The factors altered in the diet were the oil composition, being either a mixture of sunflower and linseed oil (40:60, w/w) (MO) or only linseed oil (LO) and the content of sesamin being 0 or 0.58 g / 100 g diet. The fish were fed *ad libitum* until their weight was doubled (30 days) at a water temperature of 10 °C.

Sesamin /episesamin addition to fish feed was shown to significantly affect the fatty acid (FA) composition of white muscle. Addition of sesamin/episesamin increased eicosapentaenoic acid, docosapentaenoic acid and especially docosahexaenoic acid (EPA, DPA and DHA) percentages in white muscle phospholipid and triacylglycerol (TAG). The proportion of 18:3n-3 in white muscle decreased (up to 26%) and DHA increased (up to 37%) as sesamin was supplemented (Fig. 1). Possibly sesamin increase the desaturation of 18:3n-3 towards its longer chain derivate. The FA in red muscle and liver were only slightly affected. Also, sesamin addition increased α -tocopherol levels in white muscle and liver.

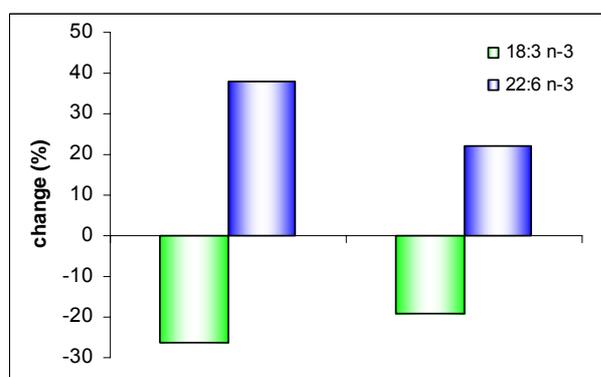


Fig. 1. Changes of 18:n-3 and 22:6n-3 in white muscle TAG after addition of sesamin in the mixed oil (MO) and linseed oil (LO) based diet respectively.

Reference:

Jeng K.C.G., Hou R.C.W., 2005. Sesamin and sesamol: Nature's Therapeutic Lignans. *Current enzyme Inhibition*. 1, 11-20.