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The Impact of Alternative Dietary Lipids on the *In Vitro* Bioaccessibility of Sole Fillets for Human Consumption

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Abstract

The fatty acid profile of farmed Senegalese sole (*Solea senegalensis*) fed three different diets (control with fish oil - CTL; 50 % replacement by vegetable oil – D50; 100 % vegetable oil replacement – D100) was determined and the bioaccessibility of fatty acids (FA) in these fish was determined using a human *in vitro* digestibility model. The effect of the different diets on the FA profile of sole as well as on the bioaccessibility of each FA in human—taking into account the digestive action upon different lipid classes, such as triacylglycerols (TAG)— was studied.

The relative FA profile varied as a function of fish diet ingredients with a progressive decline of the ω 3/ ω 6 ratio with growing replacement of fish oil by vegetable oil. Regarding FA bioaccessibility in human, differences between total ω 3 polyunsaturated fatty acids (ω 3 PUFA) (58-70 %) and total ω 6 PUFA (34-55 %) were statistically significant in CTL and D50 sole groups. But, for D100 sole, the bioaccessibility of ω 3 PUFA was not higher than that of ω 6 PUFA. The bioaccessibility of each ω 3-PUFA varied widely between 36 and 74 %, depending on the particular FA and the diet fed to

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