

Managing Nutritional Composition in Cod By-products

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World aquaculture will constitute more than half of the world seafood production within only a few years time (FAO, 2006). Therefore aquaculture is the world's fastest growing food production sector, bringing great potential for food supply, poverty alleviation and enhanced trade and economic benefits. Sustainable practises have been highlighted due to environmental concerns, consumer pressure, and focus on unit edible products per unit feed input. Also the significant unexploited potential for value adding of by-products from capture fisheries and aquaculture needs further attention. The lipid fraction is a particularly valuable in marine by-products. The marine lipids have well documented beneficial health effects, mainly associated with the long chain highly unsaturated fatty acids EPA (20:5 n-3) and DHA (22:6 n-3). Furthermore, fish is a vital source of proteins and micronutrients necessary for a healthy life. The aquaculture industry has a unique possibility to tailor-make the nutritional composition of the fish through the dietary formulations. In particular lipid composition of the fish reflects the dietary lipid composition.

This presentation will focus on tailor-making by-products from farmed Atlantic cod. The Norwegian farming of cod is a cradle business, but the production is expected to exceed 100 000 Mt within a decade – this corresponds with a 10-fold increase. Because farming of cod is in an early phase, it is possible to establish good routines implying utilisation of organs and other fish parts classified as by-products at present. Farmed cod is characterised by large livers that comprise about 12% of the body weight on average. In view of the fact that livers of farmed cod have a very high fat content (70 – 75%), it is possible to reach approximately 10 000 Mt liver oil in 10 years time. The possibility for tailor-making fatty acid composition in cod liver oil and other by-products will be discussed. Taurin is a derivative of the amino acid cysteine. Taurin has documented health beneficial effects, for example it is found to increase levels of HDL-C. The potential of elevating the taurin level in cod through dietary additions is also addressed.