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Value utilization of discarded fish livers for production of omega-3 rich oil

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Abstract

The intake of long chain (LC) omega-3 polyunsaturated fatty acids (PUFAs), especially eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA), has been associated with several health beneficial effects. Thus, there is a demand for new methods to obtain high quality omega-3 rich oils and applications with omega-3 to increase the population's intake of the healthy omega-3 LC PUFAs.

Most of the fish caught in Denmark are slaughtered and rinsed immediately after catch, when the fishing vessel is still at the sea. When the fish is rinsed, the liver is discarded in to the sea. However, this practice has now been prohibited in the new EU legislation. Liver from fish has a high content of omega-3 LC PUFAs, i.e. EPA and DHA. This liver could be stored and used for production of oil rich in omega-3 and thus, create value from waste material.

The quality of the livers will affect the quality of the oil produced. Thus, a good quality of the waste material has to be preserved from catch to oil production. Parameters that can affect the quality of the liver from catch to oil production are storage condition and initial oxidation stage. The aim of this study was to evaluate the effect of storage conditions (iced and -18 ^{o}C) on board the fishing vessel on the oxidative quality of different cod species. Additionally, a systematic evaluation of seasonal variation in oil content, oxidation status and fatty acid composition was performed on different cod species.

Keywords

Cod species; EPA; DHA; Liver