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Organic fishery products – authentication by fatty acid analysis**Ines Lehmann**¹, Joachim Molkentin², Ute Ostermeyer¹¹ Department of Safety and Quality of Milk and Fish Products, Max Rubner-Institut, Hamburg, Germany² Department of Safety and Quality of Milk and Fish Products, Max Rubner-Institut, Kiel, Germany

Aquaculture is important for the production of edible fish because of limited natural resources. Especially organically farmed fish and shrimps gain in importance even on the German market. These products are more expensive than conventional products and have to be controlled for correct labelling. Established analytical methods for fatty acids were evaluated for the authentication of fishery products.

Samples of brown trout, pangasius, gilthead sea bream, processed salmon and shrimps of different origin obtained from several retail stores and aquaculture plants were examined. In order to differentiate between three kinds of production, organic and conventional as well as wild, the fatty acid composition was determined after extraction of lipids from the fish fillet or shrimp tissue.

21 different fatty acids in the range of 14:0 to 22:6n-3 were analysed. For processed salmon a differentiation between the conventionally and organically farmed as well as wild caught individuals was feasible using linoleic acid. Besides other fatty acids the omega-3 fatty acids DHA (docosahexaenoic acid) and EPA (eicosapentaenoic acid) were always found in lower contents in the conventional than in the organic or wild samples. For brown trout and pangasius combinations of several fatty acids allowed the distinction between conventional and organic farming. As distinct from wild gilthead sea bream the farmed animals cannot be differentiated between the two culture forms. The fatty acid composition of shrimps, with the exception of the species *Litopennaeus vannamei*, did not allow an extensive authentication of organic products.

Because of the potentially high variation in feed composition, it is not practicable to establish fixed limits for the examined parameters. But the suitability particularly of fatty acids analysis for determining the kind of production was basically demonstrated.

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