

Comparison of validated methods for the determination of ester bound 2-, 3-MCPD and esterified glycidol in fishery products

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2- and 3-Monochloropropanediol (2-/3-MCPD) are food processing contaminants that might be formed by heating foods containing a chloride source. One opportunity is the formation during the wood smoking of fish and meat [1]. Investigations have shown that 3-MCPD in refined oils and fats also occur as mono- or di-esters of fatty acids [2,3]. Further identified compounds in the same matrices are glycidyl esters and 2-monochloropropane-1,3-diol (2-MCPD) esters [4]. The IARC has defined 3-MCPD as a “possible human carcinogen (group 2B)” while glycidol has been classified as “probably carcinogenic to humans (group 2A)”.

By now three analytical procedures for the determination of ester bound 2-, 3-MCPD and glycidyl esters in edible oils have been validated by DGF and AOCS (“Unilever method”: AOCS method Cd 29a-13, “3-in-1-method”: AOCS method Cd 29b-13 and DGF method C-VI 18 (10): AOCS method Cd 29c-13). They provided true and comparable results in investigation of refined edible oils and fats.

In the presented study AOCS methods Cd 29b-13 and Cd 29c-13 were modified and validated “in house” in order to quantify ester bound 2- and 3-MCPD and glycidyl esters in fishery products [5]. A comparison with a method latest published by EFSA (2015) for determining ester bound 2-, 3-MCPD and glycidyl esters in foods is shown [6].

Results of the validation and comparison of the different methods will be presented.

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- [6] EFSA (European Food Safety Authority): Development and validation of analytical methods for the analysis of 3-MCPD (both in free and ester form) and glycidyl esters in various food matrices and performance of an ad-hoc survey on specific food groups in support to a scientific opinion on comprehensive risk assessment on the presence of 3-MCPD and glycidyl esters in food. 2015, EFSA supporting publication 2015: EN-779.

Key words: ester bound 2-MCPD, ester bound 3-MCPD, esterified glycidol, fishery products, validated analytical methods



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