

Ethoxyquin - A former pesticide used as a feed preservative - Overview of findings in fish

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Ethoxyquin is a chinolene derivative used as antioxidant in feeding stuffs with higher fat contents. As ethoxyquin has a fungicide effect it was used as a pesticide. But in 2011 the authorisation for the use as pesticide was revoked [¹].

Previous methods applied to detect ethoxyquin contained an extensive cleanup (fat-extraction with petroleum ether in a Soxtherm device, gel chromatography, low temperature evaporation with toluene as keeper). In the remaining extract ethoxyquin was analysed by GC-MS. However, methods like this are not suitable for the determination of ethoxyquin: it cannot be excluded that ethoxyquin exposed to high temperatures does not degrade or alter during the analysis. Therefore, the EURL-AO developed a new method based on the existing QuEChERS-AO extraction and clean-up followed by LC-MS/MS determination [²]. With this procedure it was possible to determine ethoxyquin and its C-N-dimer easier and faster.

60 samples of conventionally farmed salmon, 13 samples from organic production and 4 samples of wild catch salmon were analyzed. The samples were taken from the local market in supermarkets either fresh or frozen. Few samples were processed (e.g. smoked salmon).

With few exceptions salmons grown in conventional fish farms contained ethoxyquin and the C-N-dimer of ethoxyquin. The highest ethoxyquin levels were observed in conventional farmed salmon were close to 0.1 mg/kg. In addition, some of these samples contained up to 1 mg/kg of the ethoxyquin C-N-dimer. However, just one of the 13 salmons from the organic fish farms contained 0.022 mg/kg ethoxyquin and in 5 of these 13 samples the C-N-dimer was detected at low levels, too. As expected, in the wild salmon samples neither ethoxyquin nor the C-N-Dimer were detected.

[¹]COMMISSION DECISION of 3 March 2011 concerning the non-inclusion of ethoxyquin in Annex I to Council Directive 91/414/EEC and amending Commission Decision 008/941/EC

[²]QuEChERS-AO: <http://www.eurl.pesticides.eu/docs/public/home.asp?LabID=300&Lang=EN>