Determination of marine algal toxins in Norwegian shellfish by liquid chromatography and mass spectrometry.

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Different liquid chromatography – mass spectrometry (LC-MS) methods for detecting marine biotoxins have been developed and established in our laboratory including sample preparation procedures. There are eight marine biotoxin groups and within each group there are many toxin analogues. These toxins are often found in shellfish such as blue mussels, clams, oysters and scallops, can cause human illness upon consumption, thus monitoring programs for these toxins often require mouse biossays (MBA) or chemical analytical tools. Okadaic acid - (OA), Azaspiracid - (AZA), Yessotoxin - (YTX), and Pectenotoxin - (PTX)- groups are among those which are detectable by LC-MS methods. LC-MS as well as liquid chromatography- tandem mass spectrometry (LC-MS/MS) have potential for carrying out multi-toxin analyses and have been used routinely in our laboratory for scanning, and quantitative determination of these toxins. The LC-MS/(MS) analysis is fully automated after extraction and hydrolysis of the samples. More than 30 samples can be acquired in the same run. Both free toxins and their analogues have been identified and measured. LC-MS/(MS) methods specifically detect each of these toxins and have much lower quantification limit than the mouse bioassays.