

THE USE OF LC-MS IN A ROUTINE TESTING LABORATORY

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Molluscan shellfish occasionally accumulate toxins from marine phytoplankton while feeding on them. These toxins cause a variety of poisoning syndromes in consumers of toxic shellfish and can be fatal. The New Zealand Shellfish Industry, annually a \$200 million export earner, controls the risk to human health from marine biotoxins with a complex monitoring system. Central to this system is the use of LC-MS/MS to test a range of toxins previously analysed by live animal bioassay. The range of toxins required to be monitored is chemically diverse and the mode of toxicological activity is varied. The development of new test methods presents many challenges for the analytical chemist. In addition to the development of test methods the application of LC-MS/MS to routine marine biotoxin testing has required: purification of analytical standards, validation of test methods, accreditation and collection of regular QC data.

Over the past 6 years we have routinely tested 10,000 shellfish samples for a group of twenty one toxins. Routine QC data such as recovery, duplicate tests and instrument sensitivity has been collected. The application of LC-MS/MS to routine testing and the use of external calibration for accurate quantitation of toxin levels has delivered many benefits over live animal bioassay and positioned New Zealand at the forefront of new technologies for marine biotoxin control.