



THE 18<sup>TH</sup> INTERNATIONAL CONFERENCE  
**ON HARMFUL ALGAE**  
FROM ECOSYSTEMS TO SOCIO-ECOSYSTEMS



### ***Toxin analysis – Novel detection methods***

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#### **LC-High resolution MS and LC-tandem MS as complementary tools for a comprehensive toxin analysis in environmental and food matrices**

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**Select your preferred type of presentation:** Oral or poster

**Second topic:** Risk assessment for algal and cyanobacterial toxins

**Abstract:** Efficient strategies are highly required to detect toxins in seafood, environment and food supply with the final aim to protect human health and to guarantee seafood safety and quality. Authorities responsible for safeguarding public health often indicated Liquid Chromatography coupled to Mass Spectrometry (LC-MS) as the more promising technique able to guarantee accurate monitoring of both environmental and food samples. Several MS based approaches have been developed to disclose the presence of toxins and even to elucidate their structures based on the interpretation of their fragmentation patterns.

Although LC tandem MS on TQ MS analyzers surely offers the highest sensitivity, selectivity and reproducibility of results, sometimes it is not able to guarantee a comprehensive overview of the actual toxic scenario of a real sample: the presence of unknown toxin analogues may not emerge in a targeted analysis. So, High Resolution MS (HRMS) is often the key technique to identify the complete toxin profile of a sample. The analysis of marine and freshwater algal and mussel samples contaminated by palytoxins, azaspiracids, and microcystins will be presented as case studies. In some cases, an approach combining TQ MS and HRMS appears to be the most desirable in order to avoid an underestimation of sample toxicity.

**Keywords:** High resolution mass spectrometry, LC-MS/MS, Toxins