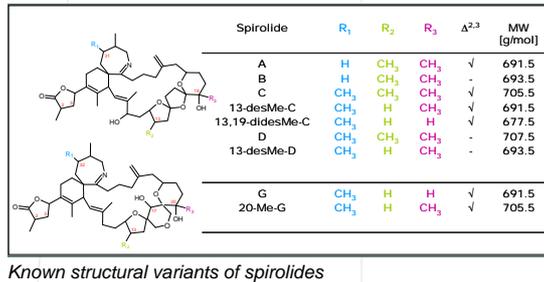




A Multi-Year Comparison of Spirolide Profiles in Planktonic Field Samples from the North Sea and Adjacent Waters

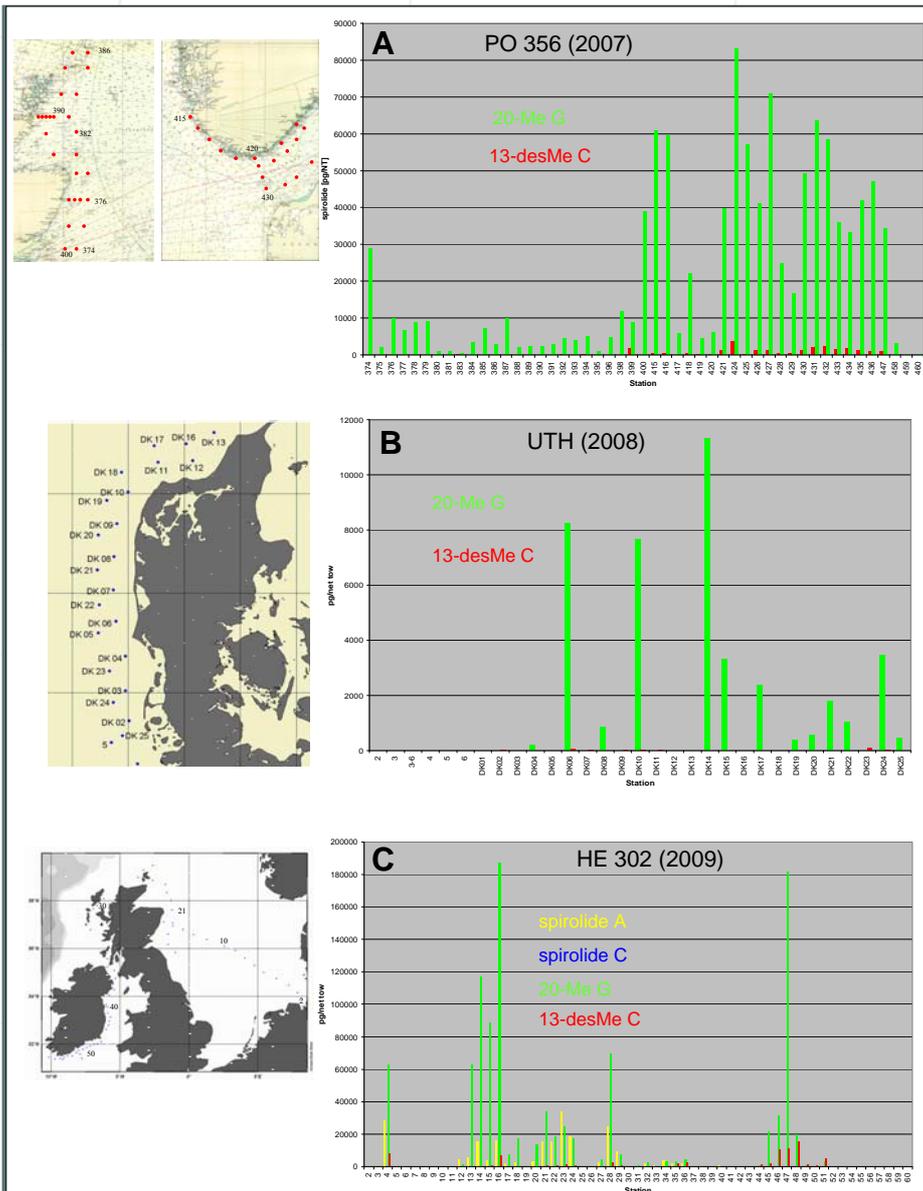
Introduction

Spirolides are „fast acting“ lipophilic cyclo imine toxins, which are produced by the marine dinoflagellate *Alexandrium ostenfeldii*. Most spirolides were identified in isolates from the Canadian east coast and structurally belong to the A – D type^{2,3}. Recently G-type spirolides were identified in shellfish and plankton from Skjer (Sognefjord, Norway)⁴.

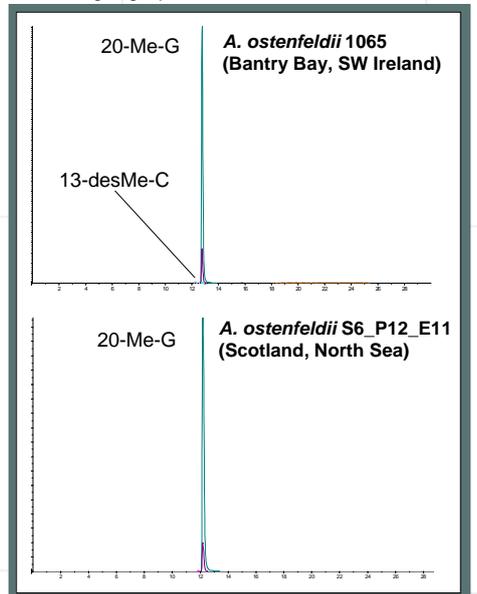


20-Methyl G is the most abundant spirolide in the North Sea

Alexandrium ostenfeldii isolates from distinct geographical locations showed almost identical profiles, primarily consisting of 20-methyl spirolide G (20-meG). Whereas the Scottish isolate produces only this variant, the Irish isolate additionally yields slight amounts of 13-desmethyl spirolide C (13-desmeC). These profiles were also reflected in the field data, where 20-meG was the most abundant spirolide throughout all samples and years. Even though 13-desmeC was also detected in the North Sea, the highest 13-desmeC/20-meG ratios were found in the southern Irish and the western Celtic Sea (HE 302, stns. 46-51). Spirolide A was barely detected in 2007 and 2008, in contrast to relatively high concentrations found in 2009 in the North Sea and western Scottish waters, but not along the Irish coast. There is no known source of spirolide A in Europe, but field surveys based upon LC-MS/MS profiling provide a plausible means of identifying new toxin sources and their biogeographical distribution.



Abundance of spirolides in the 20-50 μm size fraction of 20 m vertical net tows; A) FS Poseidon PO 356 cruise, June – July 2007; B) FK Uthörn cruise, July 2008; C) FS Heincke HE 302 cruise, April – May 2009



Spirolide profiles of two isolates of *A. ostenfeldii*

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References:

- Cembella, A. D., N. I. Lewis, and M. A. Quilliam. 2000. *Phycologia* 39:67-74.
- Hu, T., I. W. Burton, A. D. Cembella, J. M. Curtis, M. A. Quilliam, J. A. Walter, and J. L. C. Wright. 2001. *J. Nat. Prod.* 64:308-312.
- Hu, T., J. M. Curtis, Y. Oshima, M. A. Quilliam, J. A. Walter, W. M. Watson-Whright, and J. L. C. Wright. 1995. *J. Chem. Soc. Chem. Commun.*:2159-2161.
- Assen, J., S. L. MacKinnon, P. LeBlanc, J. A. Walter, P. Hovgaard, T. Aune, and M. A. Quilliam. 2005. *Chem. Res. Toxicol.* 18:509-515.