**Introduction**

Amnesic shellfish toxins (AST) caused extensive closures of Scottish offshore scallop fishing grounds during 1999 and 2000 when high levels (> 20 µg/g shellfish flesh) of domoic acid (DA) were recorded in scallop (*Pecten maximus*) gonad tissue. *Pseudo-nitzschia* spp. numbers have been monitored in Scottish coastal waters since 1996. However, the examination of any relationship between the occurrence of *Pseudo-nitzschia* cells in the water and DA levels in shellfish flesh has previously been difficult as the sampling frequency was insufficient. In order to examine this relationship, the Food Standards Agency, U.K. (FSA) funded a high frequency sampling programme from April 2001 – March 2003, where water samples for phytoplankton analysis and mussel (*Mytilus edulis*) and scallop (*P. maximus*) flesh for DA analysis, were sampled from Loch Ewe, a sealoch on the north west coast of Scotland (see map). The results of this two year field study are presented here.

**Results**

The dynamics of *Pseudo-nitzschia* spp. at Loch Ewe differed between years. An increase in *Pseudo-nitzschia* spp. cell number (>200,000 cells/l) was observed in September 2001, August 2002 and March 2003 (Fig. 1). During 2002, additional increases >25,000 cells/l were also observed in April and October.

In 2002, DA was observed in *M. edulis* flesh samples as *Pseudo-nitzschia* spp. numbers increased in the water column. Higher values of DA were recorded in *M. edulis* flesh when *Pseudo-nitzschia* cell numbers were between 25,000 – 60,000 cells/l than when the cell numbers reached 195,000 cells/l. No flesh sample was taken in September 2001 when *Pseudo-nitzschia* spp. numbers in the water were elevated.

DA concentrations in *P. maximus* gonad tissue increased after *Pseudo-nitzschia* spp. numbers began to appear in the water column (Fig. 2) with higher values recorded in 2002 than in 2001. Concentrations of DA in excess of 20 µg/g were observed in *P. maximus* gonad tissue up to 8 weeks after *Pseudo-nitzschia* spp. numbers declined in the water column.

DA concentration in whole *P. maximus* tissue also increased as *Pseudo-nitzschia* spp. increased in the water column (Fig. 3). Depuration of DA from this whole tissue was very slow and concentrations never returned to those recorded at the beginning of this study. Higher DA concentrations were also recorded in whole *P. maximus* tissue in 2002.

**Conclusions**

A relationship appears to exist between the occurrence of *Pseudo-nitzschia* spp. in the water column and DA in *M. edulis* flesh during 2002. Uptake and depuration of this toxin appears to be rapid.

A relationship appears to exist between the occurrence of *Pseudo-nitzschia* spp. in the water and DA concentrations in *P. maximus* gonad and whole tissue. Depuration of DA is apparently slow in *P. maximus* taking up to 8 weeks to deurate from gonad tissue and never deurring fully from the whole tissue.

**References**


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