Accumulation mechanism of tetrodotoxins in marine bivalves inferred from artificial toxification

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Résumé

Tetrodotoxin (TTX) is a toxin widely distributed in marine organisms. Recently, TTX has been detected in edible bivalves along the coast worldwide and is problematic in terms of unexpected food poisoning. Planktonic larvae of the TTX-bearing flatworm *Planocera multitentaculata* are suggested to be involved in the toxification of bivalves in the Pacific coast of northern Japan. Although *P. multitentaculata* possess a large amount of 5,6,11-trideoxyTTX (TDT), TDT are generally not detected from bivalves even though TTX are detected. In this study, the mussel *Mytilus galloprovincialis* was toxified artificially by feeding on larvae of *P. multitentaculata*, and the changes in the concentration of TTX and TDT were measured. The concentration of TTX and TDT in the toxified mussels decreased over time, and the decrease rate was higher in TDT than in TTX. These results suggest that TDT is rarely detected in bivalves considered to be toxified by ingesting planocerid larvae. On the other hand, akazara scallop *Chlamys* (*Azumapecten*) *farreri akazara* were collected throughout the year of 2024 from the Pacific coast of northern Japan, and the seasonal changes in the concentration of TTX and TDT were examined. TTX concentration in the akazara scallop increased temporally in May, when it is unlikely that the planocerid larvae are present, and TDT was also detected in some bivalve samples. Therefore, it is suggested that other TTX-bearing organisms may be responsible for the toxification of bivalves.

Mots-Clés: TTX, bivalves, toxification, Planocera, flatworm

*Intervenant