
Exposure to the Paralytic Shellfish Toxins (PSTs) producer *Alexandrium catenella* increases the susceptibility of the oyster *Crassostrea gigas* to pathogenic vibrios.

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Résumé

The multifactorial etiology of massive *Crassostrea gigas* summer mortalities results from complex interactions between oysters, opportunistic pathogens and environmental factors. In a field survey conducted in 2014 in the Mediterranean Thau lagoon (France), we evidenced that the development of the toxic dinoflagellate *Alexandrium catenella*, which produces paralytic shellfish toxins (PSTs) was concomitant with the accumulation of PSTs in oyster flesh and occurrence of *C. gigas* mortalities. In order to investigate the possible role of toxic algae in this complex disease, we experimentally infected *C. gigas* oyster juveniles with *Vibrio tasmaniensis* strain LGP32, a strain associated with oyster summer mortalities, after oysters were exposed to *Alexandrium catenella*. Exposure of oysters to *A. catenella* increased significantly the susceptibility of oysters to *V. tasmaniensis* LGP32. On the contrary, exposure to the non-toxic dinoflagellate *Alexandrium tamarense* or to the haptophyte *Tisochrysis lutea* used as a foraging alga did not increase susceptibility to *V. tasmaniensis* LGP32. This study shows for the first time that *A. catenella* increases the susceptibility of *Crassostrea gigas* to pathogenic vibrios. Therefore, in addition to complex environmental factors explaining mass mortalities of bivalve mollusks, feeding on neurotoxic dinoflagellates should now be considered as an environmental factor that potentially increases the severity of oyster mortality events.

Mots-Clés: Harmful Algae, Environment, Interaction, Pathogens, Defense, Paralytic Shellfish Toxin.

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