Effects of the toxic dinoflagellate Alexandrium catenella on histopathogical and escape responses of the Northern scallop Argopecten purpuratus

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Juvenile Northern scallops Argopecten purpuratus were exposed to cultures of the paralytic shellfish toxin (PST) producing dinoflagellate, Alexandrium catenella, or a non-toxic microalga as a control, T-iso. After 3 and 6 days of exposure to either A. catenella or T-iso, scallops were stimulated to elicit an escape response by exposing them to the predatory sea star Meyenaster gelatinosus. We monitored the escape response of the scallops in terms of reaction time after first contact with the sea star, number of claps (burst of rapid valve closures) until exhaustion, clapping time, clapping rate, the time scallops spent closed when exhausted, and recovery from the initial number of claps, clapping time and clapping rate. Additionally, histopathological and stress responses (through heat-shock protein [hsp70] induction), as well as accumulation of Paralytic Shellfish Poisoning (PSP) toxins, were monitored on scallops after 3 and 6 days of exposure to A. catenella. After 6 days of exposur