

Amplification of genes associated With saxitoxin biosynthesis in Bacteria associated with pyrodinium Bahamense var. Compressum using Primers designed from other Saxitoxin-producing organisms

ABSTRACT

Pyrodinium bahamense var. compressum, the primary producer of saxitoxin (STX) in tropical water, poses a palpable threat to public health and safety. Seafood and aquaculture products contaminated with lethal concentrations of the principal neurotoxin, saxitoxin, have been implicated in mortality and morbidity. Previous research revealed that the relationship between bacteria and algae may contribute directly or indirectly to the synthesis of saxitoxin. This study investigates the potential relationship between the dinoflagellate and its associated bacteria; hence the initial step is to determine whether the genes responsible for the STX production in *P. bahamense* can be found in the associated bacteria. A total of six bacterial species associated with *P. bahamense* were successfully identified in a previous study. The presence of the *sxt* genes in the associated bacterial genome was determined using primers that have previously been utilized in other saxitoxin-producing species, such as in dinoflagellates (*Alexandrium fundyense*) and cyanobacteria (*Anabaena* and *Aphanizomenon gracile*). This study showed that the utilized primers were unsuitable as the primers produced non-specific amplification in the bacterial genome. We suggest that specific primers targeting the *sxt* homolog genes in bacterial species should be designed to obtain the desired genes from the associated bacteria in a future study.