

Optimization of total RNA isolation from *Cochlodinium polykrikoides*

Abstract

Dinoflagellates are eukaryotic microorganisms that represent a group of single-celled algae composed of a highly diversified phylum that is well known for displaying an amazing range of ecological adaptation. *Cochlodinium polykrikoides* is an unarmored dinoflagellate species belonging to the Family Gymnodiniaceae. It is one of the causative agents for harmful algal blooms occurring in the west coast of Sabah, which result in massive economic damages to the aquaculture and mariculture industries. The limited availability of information pertaining to the genetics of *C. polykrikoides* raises the need for an in-depth study into the expression mechanisms and regulation of the genes of this microorganism. However, isolation of good quality and intact RNA samples from *C. polykrikoides* seems to be quite a challenge for molecular biologists. Rapid degradation of freshly isolated RNA samples is a bottleneck for researchers to conduct studies on the gene expression and regulation patterns, which requires intact and high-quality RNA samples. In this study, an attempt to establish the best protocol for isolation of good quality and intact RNA from *C. polykrikoides* was carried out by testing four different total RNA isolation protocols. We conclude that the RNA isolation protocol using the TRIzol reagent produced the best results among the methods tried. The information from this study will allow further research pertaining to the molecular aspects of *C. polykrikoides* to be conducted with much ease in the future.