eISSN:2664-5211 | pISSN:2663-4988

Research Highlight

Heteractis crispa Venom: A Substitute for Commercial Cell Lysis Buffers

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Key words:
Sea anemones, *Heteractis crispa*, actinoporins, cytolysins, apoptotic pathway, DNA extraction, cell lysis buffers

Sea anemones are inactive invertebrates that are dependent on their venom to capture and digest the prey. Moreover, this venom is also used to protect these creatures against other predators[1]. Their venoms are also rich in biologically active polypeptides including neurotoxins, enzymes and cytolysins[2]. Actinoporins are a biologically active protein which is present in the venom of sea anemones. This protein comprised of lethal pore-forming 20 kDa polypeptides.

Actinoporins have also been identified in *H. crispa* and are known for their hemolytic activity[3]. Scientists have reported cytotoxic characteristics in human tumor lines by means of p53 apoptotic pathway[4].

The DNA extraction requires the use of reagent buffers with similar cell lysis properties to disrupt the cell membrane and isolate the nucleic acids of interest. However, most of these lysis buffers are responsible for causing adverse effects on human health and they are not pocket friendly.

Accordingly, new research was conducted to isolate the venom from *Heteractis crispa* (a sea anemone) and to analyze the presence of actinoporins and its potential to be employed as an alternate for commercial cell lysis buffers[5].

For this purpose, proteome profiling of the venom extract using SDS-PAGE and silver staining was done. These steps showed the presence of proteins with molecular weights 20-215 kDa, indicating the existence of 20 kDa actinoporins among its active proteins. The venom extract was then tested for functionality as a stand-alone cell lysis reagent or as a complement to established cell lysis solutions. *Heteractis crispa* venom when used with sodium dodecyl sulfate as well as proteinase K, proved as effective isolation of highly pure DNA[5].

Conclusively, at the end of this experiment, it was found that venom isolated from *H. crispa* with detergent and protease additives, is a feasible substitute for cell lysis reagent that can be efficiently employed to isolate undamaged genomic DNA with high purity.

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