



Research Highlight

Brachyuran Crab: A Promising Alternative Agent for Human Cancer Therapy

S. Ravichandran

Centre of Advanced Study in Marine Biology,
Annamalai University, Parangipettai, India

The Ocean known as “Mother of origin of life” is considered as a rich source of structurally unique natural products. The chemical and biological diversity of the marine environment is beyond measure and hence, it is an astonishing resource for the invention of novel drugs.

Cancer is a potential threat and is the second leading cause of death globally. This ailment is considered as the culprit behind the deaths of many people. WHO proclaimed that globally, about 1 in 6 deaths is due to cancer. In 2018, The World Health Organization (WHO) reported that approximately 70% of deaths from cancer occur in low- and middle-income countries¹. Due to unavailability, high cost and negative side effects, a lot of scientists have focused on identifying the new natural products as anticancer drugs².

Cell resistance is considered as one of the main obstructions which oppose the success of anticancer treatment. Resistance is usually developed after administration of commonly employed drugs.

Accordingly, dolastatin-10 is extracted from the sea hare scientifically known as

‘*Dolabella auricularia*’ used by the researchers for clinical trials. Dolastatin-10 is a pentapeptide having 4 of the residues being structurally unique. It is regarded as the most powerful anti-proliferative agent against murine PS leukemia cells³.

In addition, antimicrobial peptides extracted from crabs show several promising activities that make them potential candidates for therapeutics⁴. These creatures are being investigated for its antimicrobial properties but the anticancer characteristics of these crabs are not studied completely, until now.

These facts motivated scientists for carrying out a new study in order to investigate anticancer activity of the brachyuran crab “*Calappacalappa*”. For this purpose, anticancer activity of the hemolymph of tested brachyuran crab was assayed by means of standard MTT colorimetric procedure against a range of human cell lines viz., MCF-7, HepG2 and HT-29 as well as Rhabdomyosarcoma⁶, A549.

Moreover, scientists assessed the cell Viability through 3-(4, 5-Dimethyl-2-thiazolyl)-2, 5-diphenyl-2H-

Key words:

Marine environment, cancer, anticancer drugs, cell resistance, cytotoxicity, brachyuran crab, antimicrobial peptides, phase contrast microscope, morphological properties

tetrazolium bromide (MTT) assay. While cytotoxicity was evaluated by the morphological properties were examined via phase contrast microscope⁵.

At the end of this experiment, findings exhibited significant cytotoxicity against all the cells. The results of the MTT assay displayed that the tested samples were considerably decreased the viability of all the tested cell lines in a dose-dependent manner upon 48 h of exposure. These results were recorded in IC₅₀. Conclusively, the crab *C. calappacan* be a potential substitute agent for human cancer therapy.

REFERENCES

1. Ferlay, J., I. Soerjomataram, M. Ervik, R. Dikshit and S. Eser *et al.*, 2012. Cancer incidence and mortality worldwide: IARC Cancer. Base No. 11, Vol. 1.0, Lyon, France: International Agency for Research on Cancer, 2013
2. Luke, S.T., A. Eric, M. Kerry, F. Patricia and H.G. William, 2005. Marine natural products as anticancer drugs. *Mol. Cancer Ther.*, 4: 333-342.
3. Pettit, G.R., Y. Kamano, C.L. Herald, A.A. Tuinman and F.E. Boettner *et al.*, 1987. The isolation and structure of a remarkable marine animal antineoplastic constituent: Dolastatin 10. *J. Am. Chem. Soc.*, 109: 6883-6885.
4. Ravichandran, S., R.M. Anbuhezian, K. Sivasubramaniyan and G. Rameshkumar, 2010. Expansion of occurrence of two bat crabs (Crustacea: Decapoda: Brachyura: Parthenopidae) from the West to the Southeast Coast of India. *Biotemas*, 23: 163-167.
5. Priya, E.R. and R. Chandran, 2014. Bioactive peptides from the grapsid crab *Grapsus strigosus* (SAKAI, 1976). *Asian J. Pharm. Clin. Res.*, 7: 305-308.
6. Priya, E.R. and S. Ravichandran, 2015. Anti cancer compounds of *Calappa calappa* L. (1758). *Int. J. Zool. Res.*, 11: 107-111.