Abstracts *(Oral Presentation)*

The Extract of *Halymenia durvillei* Induces Apoptotic and Autophagic Death of Human Triple-negative Breast Cancer Cells by Upregulating ER Stress

Kant Sangpairoj, Ph.D.[1,2*], Rapeewan Settacomkul[3], Tanapan Siangcham, Ph.D.[4], Krai Meemon, Ph.D.[5], Nakorn Niamnont, Ph.D.[6], Nilubon Sornkaew, Ph.D.[6], Montakan Tamtin[7], Prasert Sobhon, Ph.D.[5], Pornpun Vivithanaporn, Ph.D.[3]

Abstract

Introduction: Triple negative breast cancer (TNBC) is a highly aggressive and metastatic subtype of breast cancer with limited effective chemotherapy. Discovery of novel bioactive compounds from algae is being investigated as alternative sources for potential cancer prevention as well as treatment.

Objectives: To investigate the effect of the hexane solvent fraction of *Halymenia durvillei* (HDHE) on triple-negative breast cancer cell death.

Methods: The phytochemical profile of HDHE was investigated by GC-MS. The cytotoxicity of HDHE against MDA-MB-231 cells was determined. The apoptotic and autophagic effects of HDHE were analyzed. The expression of molecular markers controlling apoptosis, autophagy, DNA damage, and endoplasmic reticulum (ER) stress was determined.

Results: HDHE contains a mixture of fatty acids, mainly hexadecanoic acid. HDHE at a cytotoxic concentration induced apoptotic death of MDA-MB-231 cells through mitochondrial membrane dysfunction, and induction of apoptosis markers, and increased the expression of proteins related to DNA damage response. HDHE also induced the expression of LC-3, a marker of autophagic cell death at a cytotoxic concentration. Moreover, HDHE modulated the expression of ER stress genes.

Conclusions: The hexadecanoic acid-enriched extract of *Halymenia durvillei* promotes apoptosis and autophagy of human triple-negative breast cancer cells. This extract may be further explored as an anticancer agent for triple-negative breast cancer.

Keywords: *Halymenia durvillei,* Triple-negative breast cancer, Apoptosis, Autophagy, Endoplasmic reticulum stress

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[1] Division of Anatomy, Department of Preclinical Science, Faculty of Medicine, Thammasat University, Pathum Thani, Thailand
[2] Thammasat University Research Unit in Neutraceuticals and Food Safety, Pathum Thani, Thailand
[3] Chakri Naruebodindra Medical Institute, Faculty of Medicine Ramathibodi Hospital, Mahidol University, Samut Prakan, Thailand
[4] Faculty of Allied Health Sciences, Burapha University, Chonburi, Thailand
[5] Department of Anatomy, Faculty of Science, Mahidol University, Bangkok, Thailand
[6] Department of Chemistry, Faculty of Science, King Mongkut's University of Technology Thonburi, Bang Mod, Bangkok, Thailand
[7] Department of Fisheries, Phetcha Buri Coastal Aquaculture Research and Development Center, Phetcha Buri, Thailand
***Corresponding author:** Kant Sangpairoj, Ph.D., Division of Anatomy, Department of Preclinical Science, Faculty of Medicine, Thammasat University, Pathum Thani, Thailand and Thammasat University Research Unit in Neutraceuticals and Food Safety, Pathum Thani, Thailand
Email: ksangpairoj@gmail.com