1		Study on the antioxidative and apoptosis-inducing activities of
2		peptides from clam
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4		2021/10/13
5		Outline
6	1.	Introduction
7	2.	Radical scavenging activities of peptide from Asian clam (Corbicula fluminea)
8		and its protective effects on oxidative damage induced by hydrogen peroxide in
9		HepG2 cells
10	3.	Apoptosis-inducing active protein from marine clam Donax variabilis on NSCLC
11		cells
12	4.	Conclusion
13		Abstract
14		Bivalve mollusks have high nutritional value related to protein content which
15	possess anticancer and antioxidant properties. This report determined the effects of	
16	marine bivalve mollusks on oxidative damage and apoptosis. Xu et al. (2020)	
17	hydrolyzed Corbicula fluminea with trypsin, and then fractionated with ultrafiltration.	
18	The	e F5000 had the highest yield (68%), and relatively strong scavenging activity.
19	Moreover, the component I, F5000 separated with a gel filtration column, showed the	
20	highest DPPH radical scavenging activity, while it increasing the activity of catalase,	
21	decreasing lipid peroxidation, inhibiting H <sub>2</sub> O <sub>2</sub> -induced apoptosis, maintaining normal	
22	cell	cycle, and higher yield. Furthermore, the component I was purified and the peptide
23	seq	uence was identified as KGPAPFYPL with molecular weight of 988.3 Da. In
24	sun	nmary, purified peptide of C. fluminea had positive effects on oxidative damage in

27 dialyzed and lyophilized as PPF-V. The results showed that PPF-V significantly 28 inhibited cell viability of non-small cell lung cancer (NSCLC) cells which IC<sub>50</sub> value

was 30 μg/ml in A549 cells, and 75 μg/ml in NCI-H23 cells. Subsequently, the results 29 30

of MALDI-TOF/ MS revealed that PPF-V was highest similarity with FMRFamide like

peptides. In addition, treatment with PPF-V induced ROS generation, mitochondrial

HepG2 cells. Sahayanathan and Chinnasamy (2021) using anion exchange

chromatography to purify protein fraction from *Donax variabilis*. Protein fractions were

32 membrane potential decreasing, cytochrome c releasing, and lead to apoptosis on

NSCLC cells. In summary, PPF-V induced apoptosis via mitochondrial-mediated

pathway in NSCLC cells. Taken together, clam peptides have the potential as natural

35 antioxidants and anticancer drugs.

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1	References
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3	marine clam Donax variabilis on NSCLC cells. International Journal of Peptide
4	Research and Therapeutics, 27, 931-939.
5	Xu, H., Lv, S., Jiang, S., Lu, J., & Lin, L. (2020). Radical scavenging activities of
6	peptide from Asian clam (Corbicula fluminea) and its protective effects on
7	oxidative damage induced by hydrogen peroxide in HepG2 cells. Journal of Food
8	Biochemistry, 44, e13146.