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ISOLATION AND DEPROTEINATION OF BIOACTIVE POLYSACCHARIDES FROM *CRASSOSTREA GIGAS* USING SUBCRITICAL WATER

Adane Tilahun [a,b], Hee Jeong Lee[a], Yeon Jin Cho[a], Sol Ji Chae[a], and Byung Soo Chun [a]*

[a] Department of Food Science and Technology, Pukyong National University 45 Yongso-ro, Namgu, Busan, 48513, Korea

[b] School of Chemical and Bioengineering, Addis Ababa Institute of Technology, Addis Ababa University P.O.Box 385, Addis Ababa Ethiopia

* bschun@pknu.ac.kr

Abstract

Bivalves are an excellent source of high-quality nutrition in South East Asia as well as other parts of the world and have been used as food products and in traditional Chinese medicinal drugs for centuries. Among them, *Crassostrea gigas* is the most cultured, nutritious, and delicious species and considered as valuable food resources. *C. gigas* is rich in protein, minerals, and polysaccharides. In recent years, the water-soluble polysaccharides present in *C. gigas* have got huge interest due to their various bioactivities. Some of the reported bioactivities of *C. gigas* polysaccharides (CGP) include immunostimulatory, antioxidant, antimicrobial, antitumor, hepatoprotective and antihypertensive activities. Currently, a number of methods for extraction of polysaccharides from different organisms have been developed, such as hydrogen peroxide (H_2O_2)-assisted, microwave-assisted, and enzymatic-assisted extractions. However, these methods have several drawbacks such as the use of a huge amount of toxic chemicals in the case of H_2O_2 assisted methods and low extraction yield and the high cost of production in the case of enzyme-assisted extraction. Thus an alternative method for recovery of bioactive compounds from different organisms is needed. In recent decades recovery of bio-functional materials using subcritical water extraction (SWE) is getting momentum as a green and environmentally friendly method. SWE offers a number of advantages over other conventional extraction methods due to its temperature tunable properties such as low dielectric constant, high diffusion, low viscosity, and low surface tension which enable subcritical water an excellent solvent for recovery of functional materials. Therefore, the aim of this study is to extract CGP using SWE at various extraction conditions of temperature (100-225°C) and pressures (10-50 bar) and to determine the best extraction conditions that maximize the CGP yield. Moreover, the structural, physicochemical and biological properties of the extracted CGP will be evaluated so as to recommend the possible application of the extract.