

CHARACTERISTICS AND PROPERTIES OF PECTIN FIBER FROM BUTTERNUT SQUASH (*CUCURBITA MOSCHATA*) OBTAINED BY GREEN PROTOCOL

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ABSTRACT

Conventionally, pectin is isolated from plant material by means of acidic extraction. The ever-growing demand for 'green' products and technologies has pushed researchers to explore alternative methods of extraction. Different enzymes could be used as environmental-friendly agents for selective hydrolysis of other cell wall polysaccharides in order to release pectin. Not only that enzymatic extraction can influence pectin yield, but it can also deliver pectic fibers with different characteristics and properties than their acid extracted counterparts. As the market demand for pectic substances continually expands, new pectin sources need to be recognized and better utilized. Therefore, butternut squash (*Cucurbita moschata*) pulp could be used as an unconventional source of pectin rich fiber.

The aim of this study was to investigate the effect of enzymatic extraction procedure on yield and characteristics of pectin fiber from butternut squash pulp and compare it with the one extracted by acid. Commercial cellulase and xylanase were the cell wall degrading enzymes applied. The yields of enzymatic and acidic extraction were both approximately 60 mg/g_{DW}, while the content of galacturonic acid was 2.5-fold higher in enzymatically extracted pectin fiber. HPSEC profiles of extracted fibers were different, with enzymatically obtained pectin fiber exhibiting greater fraction with higher molecular weights than the acid extracted one. Viscosity of solution of pectin fiber extracted with the aid of enzymes was considerably lower than that of acid extracted fiber while its water solubility was significantly improved. Results of this study revealed significant influence of enzymes involvement in extraction procedure on characteristics and properties of pectin molecule from butternut squash. Furthermore, the green protocol produced pectin fiber with some of the more favorable characteristics for their advanced application in food matrices.

Acknowledgement: This study was supported by the Ministry of Education, Science and Technological Development, Republic of Serbia (Project no: 451-03-9/2021-14/200134).