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TOP ACHIEVEMENTS 2021

FACULTY OF TECHNOLOGY

Paper in a journal - Pectin from butternut squash (*Cucurbita moschata*) – The effect of enzyme-assisted extractions on fiber characteristics and properties (<https://doi.org/10.1016/j.foodhyd.2021.107201>)

Journal Food Hydrocolloids

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The effect of the application of enzymes in procedure for pectin extraction from butternut squash (*Cucurbita moschata*) on characteristics and properties of isolated fiber was studied. Combination of cellulase and xylanase with subsequent acidic extraction step enabled the highest achieved yield of pectin fiber, 81.0 ± 3.6 mg/gDW. Applied enzymes showed considerable potential to influence characteristics and properties of pectin fiber. Enzymatic and enzyme aided acidic extractions delivered pectin molecules greatly enriched in content of galacturonic acid, 72.2% and 68.1%, w/w, respectively, and with higher molecular weights of dominant polysaccharide fractions in comparison to acidic extraction. Sole enzymatic procedure enabled the extraction of pectin fiber without accompanying extraction of starch. Viscosities of solutions of pectin fibers extracted with the aid of enzymes were greatly lower than that of acid extracted fiber while their water solubility was significantly improved. Pectin fiber from enzymatic extraction exhibited the highest antioxidant capacity of 1729.81 μ M TE/100 gDW and more than 16 times higher content of phenolic acids comparing to fibers from extraction protocols that included acidic step. Results revealed that isolation of pectin fiber with favorable characteristics was enabled by green protocol that involved cellulase and xylanase, and no acid.

