ID: 631

Characterisation and Antioxidant Activity of Pectin from Sweet Potato Starch Extraction Residues

Fredrick Onyango Ogutu[1,2*]; Boniface Oure[1], Winstone Asugo Nayguti[1], Obong'o, Christine Wanja Maringa[1], Agatha Kemunto[1], Tai-Hua Mu[2*] Hongnan Sun[2]; Alfred Anakalo Shitandi[3]

1. Food Technology Division, Kenya Industrial Research and Development Institute, P.O. Box 30650-00100, Nairobi, Kenya
2. Laboratory of fruit and vegetable processing, Institute of Food Science and Technology, Chinese Academy of Agricultural Sciences, Ministry of Agriculture Beijing 100193, P.R. China
3. Research office, Kisii University P. O. Box 408-40200 Kisii - Kenya

*Corresponding author: fogutu0@gmail.com

Abstract

There is limited information on the recovery of pectin from sweet potato starch extraction residues. Besides, the extraction parameters and raw material source affect the preferred functional properties of the pectin. Hence, the current study investigated the effect of temperature and extractant concentration on pectin yield, purity and characteristics. It was found that temperature and extractant concentration played an important role in influencing pectin yield and molecular weight (MW), and its side chain composition was mainly rhamnose, arabinose and galactose. In addition, it is worth noting that galactose was the main neutral sugar of the extracted pectin side chain, similar to citrus and apple pectin. The maximum pectin yield was realised with 90ºC and 0.05% SHMP, the pectin yield was 14%, and its degree of methoxylation and MW values were approximately 12% and 645kDa. The pectin possessed good antioxidant and ferrous ion chelation activity.

Pectin was extracted and further characterised from sweet potato starch pomace with combined sodium hydroxide and sodium hexametaphosphate. The chemical composition, molecular weight, degree of methoxylation, neutral sugar composition antioxidant capacity and iron chelation capacity were assessed. The extracted pectin had up to 72% galacturonic acid content, 14%yield, and 12% DM, which was confirmed by FTIR analysis. The pectin exhibited strong antioxidant capacity and high iron chelation activity.

Keywords: *Pectin extraction; characterization; FTIR; chelation; Antioxidant*