



**MICROSTRUCTURAL CHARACTERISTICS AND ELEMENTAL DISTRIBUTION OF MAGNETIC FIELD PRETREATED SWEET PEPPER**

Michael M. Odewole<sup>1</sup>✉, Ayoola P. Olalusi<sup>2</sup>, Olufunmilayo S. Omoba<sup>3</sup>, Ajiboye S. Oyerinde<sup>4</sup>

<sup>1</sup>*Department of Food Engineering, Faculty of Engineering and Technology, University of Ilorin, Nigeria*

<sup>2, 4</sup>*Department of Agricultural and Environmental Engineering, Federal University of Technology Akure, Nigeria.*

<sup>3</sup>*Department of Food Science and Technology, Federal University of Technology Akure, Nigeria.*

✉[odewole2005@yahoo.com](mailto:odewole2005@yahoo.com)

<https://doi.org/10.34302//crpjfst/2020.12.3.4>

**Article history:**

Received:

21 November 2019

Accepted:

10 May 2020

**Keywords:**

*Pretreatment;*

*Microstructure;*

*Electromagnetism;*

*Sweet pepper;*

*Elements.*

**ABSTRACT**

The impact of magnetic field (non-thermal) pretreatment on the microstructures and elemental distribution of sweet pepper was studied. Static and pulse magnetic fields (SMF and PMF) were used in combination with magnetic field strength (8 – 30 mT) and pretreatment time (5 – 25 min) for the study. Blanching (thermal) pretreatment was used as the control. After the pretreatment, all samples were dried at 50 °C and were analyzed with Scanning Electron Machine (SEM) for microstructures and elemental distribution. Results revealed that, generally, SMFs exhibited undetached outlooks unlike PMFs that are more of visible segregated microstructures. Specifically, SMF – 1 (8 mT & 5 min), PMF – 1 (8 mT & 5 min), SMF – 2 (19 mT & 15 min), PMF – 2 (19 mT & 15 min), SMF – 3 (30 mT & 25 min), PMF – 3 (30 mT & 25 min), blanched and fresh samples showed fine spongy, segregated pebbles, partially wrinkled and undetached, bigger sizes of irregular segregated, somewhat eroded surface, smaller sizes of irregular surface with some visible holes, roughened appearance with different sizes of clumps and large puffs with dots of small particles microstructures respectively. Furthermore, the elemental analysis established that magnetic field pretreatment at PMF – 2, PMF – 3, PMF – 1 and SMF – 2 led to significant improvement/better retention in values of most elements (Na, Ca, Mg and P) considered than blanched and fresh samples at 5% probability level.