E568

Research Progress on Texture and Color of Plant-Based Meat Analogues: Raw Material Suitability, Texture Improvement, and Color Biomimetics

Zehua Huang[1]*,Ying Liu[1], Zhexin Hu[1], Zoltan Kovacs[2]
1. National Engineering Research Center of Wheat and Corn Further Processing, College of Food Science and Engineering, Henan University of Technology, 100 Lianhua Street, Zhengzhou, Henan Province 450001, People's Republic of China
2. Department of Measurements and Process Control, Institute of Food Science and Technology, Hungarian University of Agriculture and Life Sciences, 14-16 Somlói Street, H-1118 Budapest, Hungary

Plant-based meat analogues (PMA) are a major topic in future food research. The texture (mouthfeel) and color of PMA have been hot topics in this field. This study reviews the research progress on these two hotspots and introduces the specific research achievements of the author's research team in terms of raw material suitability, texture improvement, and color biomimetics in PMA preparation. The authors selected a large number of plant protein types and determined that NSI (nitrogen solubility index), viscosity, and gel strength can be used as key indicators for selecting PMA raw materials. The effects of different protein component ratios (such as soy 7s/11s protein, wheat gluten protein, and wheat alcohol-soluble protein), extrusion process water, etc. on the texture of PMA were studied; and finally, plant protein meat products simulating the color of beef or pork were prepared using Haematococcus pluvialis. These studies will provide important references for raw material selection, texture control, and color simulation in the industrial production of PMA.

E569

Non-destructive monitoring of asparagus (Asparagus officinalis, L) quality changes during storage using NIR spectroscopy

Z.H. Siyum, T.P. Thanh, L.P. Nguyen, L. Baranyai
Department of Food Measurement and Process Control, Institute of Food Science and Technology, Hungarian University of Agriculture and Life Sciences

The aim of the presented study was to monitor the surface changes of asparagus under different storage conditions using near-infrared (NIR) spectroscopy. The green asparagus spears were stored at 2, 10 and 15 °C for 12 days. Quality parameters, such as weight loss, firmness and near-infrared absorbance at range of 900-1700 nm were measured. The results of the study indicated that both storage temperature and time had significant effect on the weight loss and firmness of asparagus. On the other hand, the NIR spectra showed that the weight loss positively correlated with spectral readings at wavelengths of 996, 1156, 1402 and 1671 nm. The partial least squares regression (PLSR) model accurately predicted weight loss (R2 = 0.986, RMSE = 0.693%) and firmness (R2 = 0.988, RMSE = 1.330 N). The NIR spectral dataset of asparagus from the last storage date was classified based on temperature groups using linear discriminant analysis (LDA) and achieved the accuracy of 99.44% for calibration and 97.23% for validation. The NIR spectroscopy was successful in monitoring the quality changes of asparagus during storage at different temperatures.