

Non-destructive assessment of quality parameters of white button mushrooms (*Agaricus bisporus*) using image processing techniques

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Abstract

Considering that appearance of white button mushroom (WBM) as the trigger for registering its quality, this study was aimed at analyzing the visual cues by the application of image processing tools. While L - a - b colour space and skewness was used for estimating chromatic and morphological characteristics; onset of discolouration of WBM was predicted by hyperspectral image analysis. Undamaged (UD) and damaged (D) mushrooms were stored under refrigerated conditions (3–5 °C and 90% R_H). RGB and hyperspectral images were acquired on alternate storage days 1, 3, 5, 7 and 9. Weight loss, texture and moisture content of stored mushrooms were also recorded during the storage period. Colour changes in stored UD and D were found to be in b (21.55) and a (2399) value, respectively. Browning index in D was 83–212% higher than UD mushrooms across the storage period. Weight and firmness losses in D were higher by 65.9 and 31.4%, respectively than UD. Morphological characteristic in terms of aspect ratio and roundness were not found to vary significantly over the storage period for both UD and D mushrooms. Chemometrics revealed that multiplicative scatter correction was the best pre-processing tool and that onset on discolouration is conspicuous in the spectral region of 520–800 nm. k-NN fared better than PLS-DA for correct classification (100%) of UD and D mushrooms.