Abstract

Preference for mangoes depends on aroma and sweetness. Evaluation of these parameters by present methods destroys the samples, takes more time and is not usable in continuous packing systems. In the present investigation, the potential of a non-destructive method for predicting sweetness in term of total soluble solids using a handheld colorimeter was explored. Spectra of 329 mango samples were acquired in the visual wavelengths ranging from 400 to 700 nm and they were split into two sets, one of 165 samples for calibration and other of 164 samples for validation purposes. Calibration models of different ranges of wavelengths for prediction of total soluble solids by partial least-squares regression (PLS), principal component regression (PCR) and multiple linear regression (MLR) methods with respect to reflectance and its second-order derivatives, smoothing, multiplicative scatter correction (MSC), were developed and tested with validation sample sets. The MLR model of original spectra in the wavelength range of 440–480 nm was found to be the best. The standard error of calibration (SEC), validation (SEP) and correlation coefficients were found to be 1·91 °Brix, 1·98 °Brix and 0·90, respectively. Similarity in SEC and SEP values and satisfactorily high correlations between predicted and measured values indicated that the developed model has potential for prediction of the total soluble solids of intact mango non-destructively using visual spectra.