



E473

An attempt to the nondestructive investigation of photo-induced potato postharvest quality degradation - preliminary results

Viktória Zsom-Muha, Lien Phuong Le Nguyen, László Baranyai, Géza Hitka, Tamás Zsom
Hungarian University of Agriculture and Life Science, Institute of Food Science and Technology

Among improper harvest and/or postharvest storage conditions, the effect of direct sunlight plays an important role in quality of potato resulting in the development of green surface color based on chlorophyll formation associated with the formation of poisonous chemicals – glycoalkaloids – known as α -chaconine and α -solanine. Yellow skinned and fleshed potatoes with or without visible initial marks of green surface color were stored at normal room temperature under direct natural (sun)light conditions for almost two months. The aim of this study was to preliminary investigate the sunlight induced formation of chlorophyll related compounds in potato indirectly by the detection of chlorophyll development. This attempt was based on nondestructive determination of chlorophyll related spectral and fluorescence indices for both sunlight exposed and unexposed potato sides. Both potato groups chlorophyll content related DA-index® and chlorophyll fluorescence characteristics (F_0 , F_m , F_v and F_v/F_m) increased during the storage period representing chlorophyll formation. In case of F_m , F_v and F_v/F_m values, the yellow samples reached the values of the initial spotted green samples by day 7-9. From this time, the chlorophyll fluorescence values changed only minimally. After storage day 34, in case of both at day 0 yellow and green spotted potatoes, the sunny side's F_0 value was lower than that of shaded side. Close relationship was found between the results of monitoring-PAM (produced by Walz) and chlorophyll fluorescence imaging device (produced by PSI) (e.g. F_v $R^2=0.7226$). According to our preliminary results, the Vis/NIR DA-meter®, the monitoring-PAM and the chlorophyll fluorescence imaging fluorometers were found to be as suitable nondestructive devices for further investigations concerning the postharvest chlorophyll formation based greening phenomena, which is associated with potato solanine development.