

The effect of ultraviolet treatment on enzymatic activity and total phenolic content of minimally processed potato slices

ABSTRACT

In this work, potato slices were exposed to different doses of UV-C irradiation (i.e. 2.28, 6.84, 11.41, and 13.68 kJ m⁻²) with or without pretreatment [i.e. ascorbic acid and calcium chloride (AACCl) dip] and stored at 4 ± 1 °C. Changes in enzymatic activities of polyphenol oxidase (PPO), peroxidase (POD) and phenylalanine ammonia lyase (PAL), as well as total phenolic content (TPC) were investigated after 0, 3, 7 and 10 days of storage. Results showed that untreated and UV-C treated potato slices at 13.68 kJ m⁻² dosage level showed significantly higher PPO, POD and PAL activities. Conversely, untreated potato slices showed the lowest TPC during storage period. Potato slices subjected to AACCl dip plus UV-C at 6.84 kJ m⁻² produced lower PPO, POD and PAL activities, as well as maintained a high TPC during storage.

Keyword: Enzymatic browning; Peroxidase (POD); Phenylalanine ammonia lyase (PAL); Polyphenol oxidase (PPO); Total phenolic content (TPC); UV-C treatment