CARPATHIAN JOURNAL OF FOOD SCIENCE AND TECHNOLOGY

journalhomepage:**http://chimie-biologie.ubm.ro/carpathian_journal/index.html**

EFFECT OF UV-C IRRADIATION ON MICROBIAL LOAD AND PHENOLIC CONTENT OF POTATO TUBERS AND SLICES

Z. Čošić[1], Z. Pelaić[1]✉, M. Repajić[1], S. Pedisić[1], Z. Zorić[1], B. Levaj[1]

[1]*Faculty of Food Technology and Biotechnology, University of Zagreb, Pierottijeva 6, 10 000 Zagreb, Croatia*
✉*zpelaic@pbf.hr*

https://doi.org/10.34302/crpjfst/2021.13.3.2

Article history:
Received:
22 October 2020
Accepted:
25 July 2021

Keywords:
UV-C light;
Potato tubers;
Sliced potato;
Microbiology;
Phenolic content.

ABSTRACT

The effect of different UV-C irradiation doses on tubers and sliced potato (with or without sample's turning during irradiation) on aerobic mesophilic bacteria count (AMB), phenolic composition and visual appearance of potatoes after 24 h storage at 10 °C was examined. Doses of UV-C irradiation were 1.08, 2.70, 5.40 and 10.08 kJ m^{-2} for tubers and 1.08, 1.62 and 2.70 kJ m^{-2} for potato slices. UV-C irradiation, particularly with slice turning, caused the significant reduction of the AMB in comparison with untreated potatoes in accordance to the irradiation dose. Further, it caused a significant increase of phenolic substances in all samples, especially in tubers, although inversely to the irradiation dose. Independently of the applied treatment, chlorogenic acid, caffeic acid and rutin were identified in all samples where chlorogenic acid was predominant. Generally, the turning of potatoes during irradiation had a significant effect on the increase of chlorogenic acid in potato slices. Samples with higher phenolic content were more prone to browning. Based on all obtained results UV-C treatment of potato slices with dose 1.62 - 2.70 kJ m^{-2} and with turning could be recommended as the most promising treatment.