Effects of sonication and ultraviolet-C treatment as a hurdle concept on quality attributes of Chokanan mango (Mangifera indica L.) juice

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Abstract

The growing demand for fresh-like food products has encouraged the development of hurdle technology of non-thermal processing. In this study, freshly squeezed Chokanan mango juice was treated by paired combinations of sonication (for 15 and 30 min at 25 °C, 40 kHz frequency) and UV-C treatment (for 15 and 30 min at 25 °C). Selected physicochemical properties, antioxidant activities, microbial inactivation and other quality parameters of combined treated juice were compared to conventional thermal treatment (at 90 °C for 60 s). After thermal and combined treatment, no significant changes occurred in physicochemical properties. A significant increase in extractability of carotenoids (13%), polyphenols (37%), flavonoids (33%) and enhancement in antioxidant capacity was observed after combined treatment. Thermal and combined treatment exhibited significant reduction in microbial load. Results obtained support the use of sonication and UV-C in a hurdle technology to improve the quality of Chokanan mango juice along with safety standards.