

Application of ultraviolet radiation in the drying process of longan (*Dimocarpus longan* 'Daw')

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Abstract

Production and processing of organic longan fruit is hampered due to limited use of chemicals. Contamination of microorganisms, especially mold, is a major problem causing shorter shelf-life of dried whole organic longan fruit. Ultraviolet radiation at 254 nm (UVC), a physical treatment, has high potential on microbial reduction without any remaining chemical residues. The longan cultivar 'Daw', AA-grade, was treated under the UVC for 70 min prior to a normal drying process. Drying at 60°C for additional 72 h or at 75°C for 36 h was conducted to obtain the required moisture content and water activity according to the Thai Agricultural Commodity and Food Standard. Higher moisture loss at an exponential rate was obtained in the treated sample in a drying curve comparing to the control. Scanning electron microscope (SEM) showed thinner skin layers of the treated fruit compared to control fruit, which possibly caused the higher moisture loss. Sensory evaluation on overall acceptability showed higher scores on samples dried at 60°C for 72 h compared to samples dried at 75°C for 36 h ($P < 0.05$). However, no significant difference was found between the control and the UV treated samples ($P > 0.05$). The UVC treated fruits had lower microbial counts than that in the control. In addition, lower moisture content uptake was also found in the UVC treated samples during 90 days storage compared to the control. This technique provides a benefit for manufacturers of whole dried organic longan fruit.