Title Intermittent microwave–convective drying of red pepper: Drying kinetics, physical (colour and texture) and sensory quality

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Abstract

In this research, effectiveness of various microwave–convective drying treatments were compared to convective air drying and commercial belt drying to establish the most favourable drying condition in terms of drying kinetics and dried product quality. Quality parameters were colour (L^*, a^*, b^* coordinates), textural characteristics (hardness), and sensory properties (visual appearance, colour, texture and overall acceptance). The microwave drying treatments were done both in the intermittent and continuous modes at two different microwave output powers (597.20 and 697.87 W) using two identical microwave–convective dryers. Overall, the continuous microwave–convective drying had the lowest drying time among the drying treatments, but it resulted in poor quality product while intermittent microwave–convective drying gave good product quality comparable to convective air drying and commercial belt drying. The intermittent microwave–convective drying conducted at lower drying air temperature and microwave power level with relatively long power-off time resulted in a more stable and gentle drying process concerning dried product quality. Based on the results of this study, the intermittent microwave–convective drying at 35 °C with a pulse ratio of 3.0 at 597.20 W provided considerable savings in drying time when compared to convective air drying and should be the preferred method of drying to produce high quality product with better physical (colour and texture) and sensory attributes.