Abstract

Little detailed information is available for the far-infrared and microwave drying characteristics on peach and far-infrared combined with microwave drying on other food products. Experiments were conducted to study microwave and far-infrared dehydration characteristics and two-stage drying process involving far-infrared following microwave drying on peach. As microwave drying power and infrared drying power increased, dehydration rate of peach increased and whole drying energy consumption decreased. Peach experienced two falling rate periods when dried with microwave drying or far-infrared drying, and the first falling rate period under moisture content of peach more than 1.7 (dry basic, d. b.), the second falling rate period under less than moisture content 1.7 (d. b.). The same water loss will consume more energy and the steeper curve of energy versus moisture content were obtained when the moisture content is less than 1.7 (d. b.). However, differed from microwave drying, an accelerating dehydration rate period existed in the initial period of far-infrared drying. The effects of infrared drying power, microwave drying power and exchanging moisture content at former far-infrared drying converting into latter microwave drying (three factors) on energy consumption rate and sensory quality (two indices) are significant. The interaction effect of infrared drying power and exchanging moisture content on two indices is significant. The effects of second-order of microwave drying power and of interaction between infrared drying power and microwave drying power on energy consumption rate were not significant. The effects of second-order of exchanging moisture content and of interaction between exchanging moisture content and microwave drying power on sensory quality were not significant.