Abstract

The effects of high temperature drying on shiitake mushroom were investigated. Shiitake mushrooms were dried in a tunnel dryer at four air temperatures regimes, namely 40, 50, 60°C for 24 hr and at 60°C for 12 hr followed by 40°C for 12 hr. Volatile compounds were extracted by Likens and Nikerson apparatus and analysed by gas chromatography-mass spectrometry. Lenthionine is a sulphur compound which is the major volatile compound present in dried shiitake mushrooms as an effect of high temperature. Fresh shiitake mushrooms exhibit only a slight odour but upon drying, a characteristic sulfurous aroma gradually develops. Lenthionine was present after drying at 50, 60°C for 24 h and 60°C for 12 hr followed by 40°C for 12 hr. It appears that lenthionine content was gradually increasing following the increase of drying temperature. However, exposure to a constant temperature for prolonged time led to its destruction. Thus, drying at 60°C for 12 hr followed by 40° C for 12 hr resulted in a higher lenthionine concentration than other drying temperatures and a lower cost than drying at 60°C for 24 hr. Therefore, the optimum temperature for drying and storage of shiitake mushrooms was found to be 60°C for 12 hr followed by 40°C for 12 hr and storage at 30°C. Although storage at 20°C resulted in a higher concentration of some volatiles (but not all), storage at 30°C would be a better option for the weather conditions prevailing in Central Thailand. As a matter of fact, storage at 20°C would not probably require a cooling system which would attract a higher cost to the product.