

## Abstract

Hot air drying (HAD) is the most commonly used method for processing of postharvest *Lentinus edodes* in industry, which may promote lignification in the mushroom, affecting nutrition and edibility of *L. edodes*. The mechanism underlying this, however, remains unclear, so it's difficult to control and reduce the phenomenon. Results suggested that lignifying structure, the shrinkage of hyphae tissues and tightening of tubular structure, were observed in SEM owing to transportation of moisture distribution. The transverse relaxation time of free water and immobilized water mobilized significantly, and only  $1.26 \pm 0.34$  and  $1.15 \pm 0.17$  g/100 g bound water was left in the stipe and pileus after 12 h. Furthermore, the increase of lignin content illustrated that HAD process promoted lignification of *L. edodes*, along with the increase of total [polyphenol](#) content and cellulose content. HAD process promoted the lignification of *L. edodes* by increasing the content of lignin, which was attributed to the elevation of total polyphenol content and regulated by [phenylalanine](#) ammonia lyase (PAL) and peroxidases (POD). These results will serve as a theoretical underpinning for elucidating the mechanism of lignification in *L. edodes* and controlling this deterioration phenomenon during HAD process in food processing.