



Abstract

Effect of Different Drying Methods on Quality Attributes and Microstructure of Mycelium (*Pleurotus eryngii*)[†]

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Abstract: Expanding populations and limited natural resources are leading to demands for alternative dietary proteins. The world food supply needs to be increased to feed the increasing population with the same limited resources. To overcome the hunger problem, alternative protein sources such as fungal “Mycelium” can be regarded as a novel, sustainable and safe dietary protein to support health with limited resources (water, land) and with a lower carbon footprint. Although, mycelium is rich in various minerals, vitamin D₂, fibers, essential amino acids along with protein, its storage life is relatively short due to its high moisture content (89% wb). Thus, drying of mycelium would facilitate shelf-life enhancement for further processing. Moving in this direction, cold pressing as a pre-processing step was conducted to reduce the initial moisture of mycelium so as to reduce the drying time and cost by a significant amount. Then, the influence of different drying techniques such as vacuum (VD), microwave (MWD) and freeze (FD) drying methods on quality attributes such as color, microstructure (SEM), water solubility index, water absorption index, bulk and tapped density, and flowability of *Pleurotus eryngii* was determined. Pressing at 5 N for 30 s reduced drying time by approximately 50–55%. FD was the most effective which retained the main characteristics of *P. eryngii* followed by VD and MWD. SEM analysis showed that FD sample contains porous fibrous structure, whereas MWD and VD samples contain a hard structure with less or no pores. Finally, despite having the shortest drying time, MWD and VD damages the structure of *P. eryngii*, whereas nutrient loss is not significant in all the drying processes.

Keywords: mycelium; vitamin D₂; pressing; drying; SEM



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