

## Quantification of protein content in *Pleurotus ostreatus* (American oyster mushroom) and optimizing methods for preservation

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*Pleurotus ostreatus* is one of the most used edible mushrooms in Sri Lanka, with a high protein content and numerous bioactive compounds. Maintaining the protein level of mushrooms is critical for sustaining their nutritional value. The main objective is to identify the most effective method for preserving the protein content in *P. ostreatus* mushrooms, utilizing a scientifically rigorous approach. The fresh *P. ostreatus* were collected from an agricultural farm in Mahara, Sri Lanka, and validated using morphological and structural information. Mushrooms underwent several preservation treatments, including *Aloe vera* coating, refrigeration (4°C), freezing (-18 °C), blanching with steam and blanching with hot water (100°C), oven drying (170 °C), sun drying (24 hours), dehydration, air frying, and chemical treatments such as citric acid (0.5 moldm<sup>-3</sup>, 1.0 moldm<sup>-3</sup>, 1.5 moldm<sup>-3</sup>, 2.0 moldm<sup>-3</sup>, and 2.5 moldm<sup>-3</sup>) and EDTA (1 moldm<sup>-3</sup>, 2 moldm<sup>-3</sup>, and 3 moldm<sup>-3</sup>). For each treatment, 100 g of sample and three replicants were used. The protein content was quantified using the Bradford assay and analytically compared using a one-way ANOVA test. The results revealed mushrooms coated with *A. vera* gel had the highest protein content (0.057 ± 0.002 g). Citric acid treatment (2.5 mol/dm<sup>3</sup>) had the least protein content (0.004 ± 0.001 g). The findings concluded that *A. vera* gel proves to be efficient for preserving the protein content of fresh mushrooms after harvest. Overall, this study reveals valuable insights into the protein content of *P. ostreatus* and offers optimized preservation methods for this mushroom species. These findings have practical implications for the food industry, promoting the utilization of *P. ostreatus* as a protein-rich ingredient and improving its shelf life for widespread consumption.

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