Exploring Ecofriendly Way To Recycle Wasted Part of Flammulina velutipes: Through Proving Bioactivity of Its Subcritical Water Extract

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This study was conducted to explore bioactive compounds found in the lower part of Korean enoki mushrooms, which is typically discarded, and suggests a method for utilization by extracting with a methanol/subcritical water solvent. ‘Baekseung’ and ‘Aram’, Korean varieties of enoki mushroom, were separated into three parts: head, body, and lower part. Each part was treated with methanol and subcritical water extraction, seperately. The result of HPLC analysis found that subcritical water extraction had a higher GABA concentration, indicating that subcritical water could extract more GABA. TPC/DPPH assay results showed that 250\degc is the optimal temperature for subcritical water extraction, and subcritical water extract has better antioxidant activity. From morphological observation and MTT reduction assay, it was proven that subcritical water extract derived from ‘Aram’ supresses pancreatic cancer cells and protects nerve cells. Based on these results, it can be suggested that the subcritical water extract of Enoki mushrooms could be utilized to lessen the danger of infection by COVID-19 for high risk groups as well as implemented in bioactive drugs with antioxidant, anticancer effects. Accordingly, this study can be used as basic research data for continued study about the application of these bioactive substances. If the waste part of Enoki mushrooms can be reused through eco-friendly subcritical water extraction, carbon emissions caused by treating food waste can also be reduced.

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