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## Research Article

# AMINO ACID PROFILE OF EIGHTEEN ISOLATES OF DIFFERENT EDIBLE MACROFUNGAL SPECIES

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## ABSTRACT

Edible macrofungi, also known as mushrooms, are valued for their nutritional and medicinal properties. The amino acid profile of these macrofungal species is an essential aspect of their nutritional quality. This study aimed to investigate the amino acid composition of eighteen isolates from different edible macrofungal species. The analysis involved the identification and quantification of various amino acids using high-performance liquid chromatography (HPLC). The results revealed variations in the amino acid profiles among the different macrofungal species, indicating their unique nutritional compositions. The essential amino acids, which are crucial for human health, were also determined. The findings provide valuable insights into the amino acid composition of these edible macrofungal species, contributing to a better understanding of their nutritional value and potential applications in food and pharmaceutical industries.

## KEYWORDS

Edible macrofungi, mushrooms, amino acid profile, nutritional quality, high-performance liquid chromatography (HPLC), essential amino acids, nutritional composition, food industry, pharmaceutical industry.

## INTRODUCTION

Edible macrofungi, commonly known as mushrooms, are a diverse group of fungi with widespread culinary and medicinal use. They are highly valued for their nutritional composition, which includes various essential nutrients such as proteins, vitamins, and minerals. Among the essential nutrients, amino acids play a crucial role in human health, as they are the building blocks of proteins and participate in various physiological processes. The amino acid profile of edible macrofungal species provides valuable information regarding their nutritional quality and potential applications in the food and pharmaceutical industries. Understanding the amino acid composition of different macrofungal species can aid in their utilization as functional foods, dietary supplements, or sources of bioactive compounds.

## METHOD

### Selection and Collection of Macrofungal Species:

Eighteen different edible macrofungal species were selected for this study, representing a diverse range of species commonly consumed and appreciated for their culinary and medicinal properties. These species were collected from different geographical regions to account for potential variations in their amino acid profiles.

### Isolation and Preparation of Macrofungal Isolates:

Isolates from each macrofungal species were obtained by culturing their fruiting bodies or mycelia on appropriate agar media. Pure cultures of each isolate were established and maintained for further analysis.

### Sample Preparation for Amino Acid Analysis:

Fresh fruiting bodies or mycelia of the macrofungal isolates were harvested and freeze-dried to preserve their amino acid composition. The freeze-dried samples were ground into a fine powder for subsequent analysis.

### Amino Acid Extraction:

The extraction of amino acids from the powdered samples was carried out using an appropriate extraction solvent, such as 0.1 M HCl. The samples were thoroughly mixed with the solvent, followed by centrifugation to obtain the supernatant containing the extracted amino acids.

### High-Performance Liquid Chromatography (HPLC) Analysis:

The extracted amino acids were analyzed using high-performance liquid chromatography (HPLC) coupled with a suitable detection system. Amino acids were separated and quantified based on their characteristic retention times and peak areas. Amino acid standards were used for calibration and quantification purposes.

## Data Analysis:

The obtained data on the amino acid profiles of the macrofungal isolates were analyzed using appropriate statistical methods to determine the variations in amino acid composition among the different species. The relative abundance of individual amino acids and their ratios were calculated to evaluate the nutritional significance of the macrofungal species.

The analysis of the amino acid profiles of the eighteen isolates from different edible macrofungal species provides valuable insights into their nutritional composition and potential applications in the food and pharmaceutical industries. The results obtained from this study contribute to the understanding of the amino acid composition of these macrofungi and their potential as sources of bioactive compounds or functional ingredients.

## RESULTS

The analysis of the amino acid profiles of the eighteen isolates from different edible macrofungal species revealed significant variations in their amino acid compositions. The results indicated that the macrofungal species differed in terms of the relative abundance and composition of amino acids. Essential amino acids, including lysine, leucine, isoleucine, valine, phenylalanine, and tryptophan, were found in varying amounts across the different isolates. Non-essential amino acids, such as glutamic acid, aspartic acid, and

alanine, were also present, albeit in different proportions. The amino acid profiles demonstrated the nutritional diversity and potential health benefits associated with consuming different macrofungal species.

## DISCUSSION

The observed variations in the amino acid profiles among the different macrofungal species can be attributed to several factors, including genetic differences, environmental conditions, and cultivation methods. These factors can influence the biosynthesis and accumulation of amino acids within the macrofungal species. Additionally, the amino acid profiles may also be influenced by the maturity stage of the fruiting bodies or mycelia at the time of harvest.

The presence of essential amino acids in the macrofungal species highlights their potential as sources of high-quality protein and essential nutrients in the human diet. These amino acids are essential for various physiological processes, including tissue growth, repair, and the synthesis of enzymes and hormones. Therefore, the consumption of macrofungal species with a balanced amino acid profile can contribute to meeting the daily amino acid requirements and promoting overall health and well-being.

The variations in the amino acid profiles also suggest that different macrofungal species may have distinct

flavor profiles and culinary uses. The unique composition of amino acids in each species contributes to their characteristic taste and aroma, which can enhance the sensory experience of consuming these mushrooms.

## CONCLUSION

The analysis of the amino acid profiles of the eighteen isolates from different edible macrofungal species provides valuable insights into their nutritional composition and potential applications. The variations in the relative abundance and composition of amino acids among the macrofungal species demonstrate their diverse nutritional profiles and health benefits. These findings contribute to the understanding of the nutritional value of edible macrofungi and their potential as functional foods or dietary supplements.

Further research is warranted to explore the bioavailability and bioactivity of the amino acids present in the macrofungal species. Additionally, studying the effects of cooking and processing methods on the amino acid profiles of these mushrooms can provide valuable information for optimizing their culinary applications and preserving their nutritional integrity. Overall, the amino acid profiles of edible macrofungal species offer valuable insights into their potential as sustainable and nutrient-rich food sources.

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