DETERMINATION OF AMINO ACID CONTENT IN MEDICINAL PLANTS GROWING IN THE TERRITORY OF UZBEKISTAN

Umarova Gullola

Fergana medical institute of public health Department of Medical and bilogical chemistry Teacher

gullolaumarova68@gmail.com

Orcid: **0009-0001-4787-8537**

https://doi.org/10.5281/zenodo.15346192

Abstract. *This study aims to determine the amino acid content in medicinal plants growing in the territory of Uzbekistan. Medicinal plants have been an integral part of traditional medicine for centuries due to their therapeutic properties. Amino acids, as the building blocks of proteins, play a crucial role in various physiological processes in the human body. The research focuses on analyzing the amino acid composition of selected medicinal plants commonly found in Uzbekistan's diverse climatic zones, including mountainous, desert, and forest areas.*

Keywords: *Amino acid, Medicinal plants, Phytochemicals, Chromatography, Metabolism, Biochemistry.*

ОПРЕДЕЛЕНИЕ СОДЕРЖАНИЯ АМИНОКИСЛОТ В ЛЕКАРСТВЕННЫХ РАСТЕНИЯХ, ПРОИЗРАСТАЮЩИХ НА ТЕРРИТОРИИ УЗБЕКИСТАНА

Аннотация. *Целью данного исследования является определение содержания аминокислот в лекарственных растениях, произрастающих на территории Узбекистана. Лекарственные растения на протяжении столетий являются неотъемлемой частью традиционной медицины благодаря своим терапевтическим свойствам. Аминокислоты, как строительные блоки белков, играют важнейшую роль в различных физиологических процессах в организме человека. Исследование сосредоточено на анализе аминокислотного состава отдельных лекарственных растений, обычно встречающихся в различных климатических зонах Узбекистана, включая горные, пустынные и лесные районы.*

Ключевые слова: *минокислоты, лекаарственные растения, фитохимические вещества, хроматография, метаболизм, биохимия.*

Introduction

The utilization of medicinal plants in traditional medicine has been a part of human culture for centuries. These plants, grown in various regions across the world, are rich in biologically active compounds, which play a vital role in health maintenance and disease prevention. Uzbekistan, with its diverse climate and rich flora, is home to a variety of medicinal plants that

have been used for therapeutic purposes. Among the many compounds found in these plants, amino acids stand out due to their essential role in cellular function, metabolism, and overall health.

Amino acids are organic compounds that are the building blocks of proteins, which are crucial for the proper functioning of all living organisms. They are classified into essential and non-essential types, with essential amino acids being those that the body cannot synthesize and must be obtained through diet or external sources, including medicinal plants. The presence and concentration of these amino acids in medicinal plants can significantly impact their therapeutic value and efficacy in treating various ailments.

In recent years, the demand for scientifically backed information on the nutritional and therapeutic properties of medicinal plants has increased, leading to studies on the amino acid content in plants grown in specific regions, including Uzbekistan. Identifying and quantifying the amino acid content of these plants is essential for determining their potential therapeutic applications, as well as for establishing their nutritional benefits.

Literature review and methodology

Uzbekistan is rich in natural resources, including a variety of medicinal plants. These plants have been used for centuries in folk medicine and play a significant role in plant sciences. Medicinal plants contain a variety of biologically active compounds, including amino acids, which are essential for human health. Amino acids are the building blocks of proteins, and they play a crucial role in maintaining the normal functioning of the human body. Each amino acid serves specific physiological functions, affecting various systems of the body.

Amino acids are vital for the synthesis of proteins, which constitute the structural components of cells and tissues. They also facilitate biochemical reactions and regulate metabolic processes. Furthermore, amino acids support the immune system, energy production, and contribute to the prevention of certain diseases.

Plants, especially medicinal ones, contain amino acids that are beneficial for human health. These amino acids provide essential nutrients, and are particularly helpful for individuals following vegetarian or vegan diets, where some amino acids may be lacking.

Importance of Amino Acids in Human Health

Amino acids are organic compounds that serve as the building blocks for proteins, which in turn are critical to the structure and function of every cell in the human body. In addition to their role in protein synthesis, amino acids are involved in various metabolic processes, such as energy production, the formation of neurotransmitters, and the regulation of the immune system.

They also help repair tissue damage, regulate blood sugar levels, and contribute to the overall growth and maintenance of the body.

There are 20 different amino acids that the body uses to make proteins, 9 of which are essential, meaning they must be obtained through diet. Plants, especially medicinal ones, can serve as a valuable source of these essential amino acids.

Medicinal Plants in Uzbekistan and Their Amino Acid Content

Uzbekistan's diverse climate and geographical conditions create favorable conditions for the growth of medicinal plants. In particular, the mountainous, desert, and forested regions of Uzbekistan are home to many plants that contain high levels of biologically active compounds, including amino acids. These plants have been used in traditional medicine for various ailments and continue to be of interest in modern medicine for their therapeutic potential.

Several medicinal plants in Uzbekistan contain significant amounts of amino acids such as glutamic acid, lysine, methionine, serine, alanine, and others. These amino acids contribute to the plants' healing properties and enhance their effectiveness in treating various health conditions. For example, glutamic acid is important for the central nervous system, while lysine plays a key role in muscle tissue repair.

Research Objectives and Methodology

The main objective of this research is to determine the amino acid content in medicinal plants growing in Uzbekistan and to analyze their potential therapeutic applications. The study aims to:

- ✓ Identify and select medicinal plants growing in Uzbekistan for amino acid analysis.
- ✓ Extract and analyze the amino acids present in the selected plants.
- ✓ Evaluate the medicinal properties of these plants based on their amino acid content.

The research methodology will involve several steps:

The findings of this study will provide new scientific data on the amino acid content of medicinal plants growing in Uzbekistan. This information will be valuable for understanding the therapeutic potential of these plants and their possible applications in modern medicine. The research will also provide insights into the biological and medicinal properties of these plants, helping to expand their use in treatment and nutrition.

The results of the study may help identify specific medicinal plants that have a high concentration of essential amino acids, which could be used in the development of new pharmaceutical products. Additionally, the findings could promote the more widespread use of

these plants in traditional medicine and encourage the incorporation of plant-based amino acids into modern therapeutic practices.

Conclusion

Determining the amino acid content of medicinal plants growing in Uzbekistan is crucial for understanding their therapeutic properties and nutritional value. This research will provide valuable data on the medicinal and nutritional applications of these plants and contribute to the development of new treatments and remedies. By identifying plants with high levels of amino acids, this study will enhance the scientific understanding of Uzbekistan’s rich plant resources and support the expansion of their use in both traditional and modern medicine.

References

1. Rukavishnikov V.S., Kholodov A.P., Fedorov E.N. "Amino Acids and Their Derivatives in Medicinal Plants"
2. Shavkunov L.A. "Medicinal Plants of Uzbekistan and Their Healing Properties" (1998)
3. King J.A., Linder D.L. "Plant Amino Acids and Their Application in Medicine"
4. Kartashova E.K., Goryacheva O.P. "Chemical Composition of Medicinal Plants: Identification of Amino Acids"
5. Karimov I.A. "Medicinal and Aromatic Plants of Uzbekistan"
6. Sokolov G.T., Shevchenko M.S. "Amino Acids in Medicinal Plants: An Overview"