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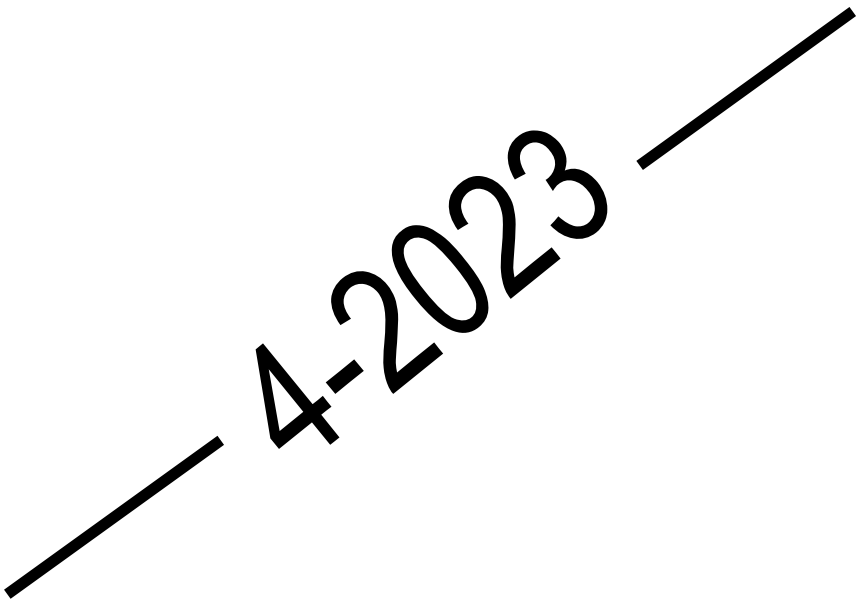

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DORIVOR OLTIN TOMIR O‘SIMLIGINING FLAVONOID TARKIBI

ФЛАВОНОИДНЫЙ СОСТАВ ЛЕКАРСТВЕННОГО РАСТЕНИЯ ЗОЛОТОЙ КОРЕНЬ

FLAVONOID COMPOSITION OF THE MEDICINAL PLANT GOLDEN ROOT

Asqarov Ibrokhim Rakhmanovich[1], Razzakov Nabijon Alijonovich[2]

[1]**Asqarov Ibrokhim Rakhmanovich** – Andijon davlat universiteti, professor
[2]**Razzakov Nabijon Alijonovich** – Andijon davlat tibbiyot instituti, dotsent

Annotatsiya

Ushbu maqola O‘zbekiston xududlarida uchrovchi “Oltin tomir” dorivor o‘simligining flavonoid tarkibini yuqori samarali suyuqlik xromatografiyasi usuli yordamida eksperimental yo‘l bilan o‘rganilganligi haqida. Oltin tomir asab tizimiga oid kasalliklarda xususan, xotiraning pasayishi (ensefalopatiya)ni oldini olish va davolash maqsadlarda qo‘llanilganda o‘simlik biologik faol flavonoidlarga boy ekanligi sababli yaxshi samara berishini ilmiy asoslashga qaratilgandir.

Аннотация

Данная статья посвящена экспериментальному изучению флавоноидного состава лекарственного растения “Золотой корень”, встречающегося в регионах Узбекистана, с методом высокоэффективной жидкостной хроматографии. Золотой корень направлен на научное обоснование того, что при заболеваниях нервной системы, в частности, при применении с целью профилактики и лечения ухудшения памяти (энцефалопатии), растение дает хороший эффект, так как богато биологически активными флавоноидами.

Abstract

This article is devoted to the experimental study of flavonoid composition of the medicinal plant "Golden Root", found in the regions of Uzbekistan, with the method of high-performance liquid chromatography. Golden root is aimed at scientific substantiation that in diseases of the nervous system, in particular, when used for the prevention and treatment of memory impairment (encephalopathy), the plant gives a good effect, since it is rich in biologically active flavonoids.

Kalit so‘zlar: *Flavonoid, yuqori samarali suyuqlik xromatografiya, rutin, kversetin, gall kislotasi, kempferol, gradiyent, ensefalopatiya.*

Ключевые слова: *Флавоноид, высокоэффективная жидкостная хроматография, рутин, кверцетин, галловая кислота, кемпферол, градиент, энцефалопатия.*

Key words: *Flavonoid, High performance liquid chromatography (HPLC), routine, quercetin, gallic acid, kaempferol, gradient, encephalopathy.*

INTRODUCTION

It is known that many different events happen in our daily life and it often leads to nervousness. Nervousness. and its chronic continuation leads to various diseases, nervous people get sick quickly due to their anger, blood pressure rises. Changes in the functioning of internal organs of such people also occur [1].

According to the WHO, more than 350 million of the world's population suffer from nervous system diseases, and between 2011 and 2030, the world economy will spend $16.3 trillion to treat these diseases [2]. In solving these problems, there is a great need to use medicinal and harmless food supplements made from medicinal plants by using phytotherapy methods.

There is now a lot of evidence that phytochemicals from plants, especially flavonoids, can have a beneficial effect on memory and mental ability [3; 4]. Flavonoids may have the ability to directly affect the brain's innate "memory architecture" [3]. This cellular basis weakens as a person ages, the population of neurons and their mutual synaptic (specific within the central nervous system) communication deteriorates, and the efficiency of the central nervous system's function, i.e. processing of received information, decreases. and storage deteriorates.

Thus, by consuming plant products (fruits) rich in flavonoids, it is possible to influence the cognitive function of the central nervous system (information analysis, mental analysis) and ultimately important behavioral characteristics such as memory [6].

Flavonoids are angioprotectors, that is, they increase the strength of capillary blood vessels and improve blood circulation. At the same time, it also has the property of cardioprotector (improving blood circulation in heart blood vessels and peripheral blood vessels) [7].

EXPERIMENTAL PART

Qualitative and quantitative analysis of flavonoids was carried out in the plant sample. We used 96% ethyl alcohol as a solvent to extract biologically active substances from the plant root. For this, the sample and alcohol were mixed in 1:10 ratio and extracted using a magnetic stirrer for 75 minutes at a temperature of 35°C. The amount of rutin, gallic acid and quercetin in the samples was determined using an Agilent Zorbax 4.6 mm ID x 12.5 mm cartridge and a Perkin Elmer C18 250x4.6 mm 5 mm C18 (USA) column as the stationary phase. For this, a 0.5% solution of acetic acid in a ratio of 35:65 and standard solutions in acetonitrile with different concentrations: 0.025 mg/ml and 0.05 mg/ml were prepared, the flow rate was 1 ml/min, the temperature of the thermostat was 400C, the injection sample volume was 10 µl. a calibration curve was generated. Gallic acid in 2.67 minutes, rutin in 3.57 minutes and quercetin in 16 minutes were chromatogram based on standard samples on HPLC (LC 2030 C 3D Plus Shimadzu Japan). When performing the analysis of apigenin and kaempferol, a chromatogram was obtained based on the following gradient in 12 minutes at a flow rate of 0.75 ml/minute based on the above device parameters. Using HPLC the flavonoid content of the root of the golden vein plant is given in the following chromatograms:

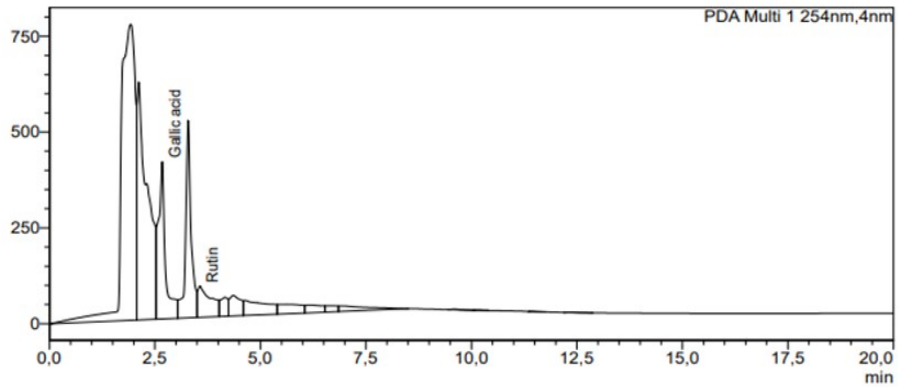

Figure 1. Chromatogram of HPLC extract of golden root plant

In the above chromatogram, gallic acid and rutin in the root extract of golden root plant gave a peak at 2.67 minutes and rutin at 3.57 minutes based on a specific gradient, but quercetin was not found in the extract. Below is the chromatogram obtained for determining the amount of apigenin flavonoid in the plant using HPLC:

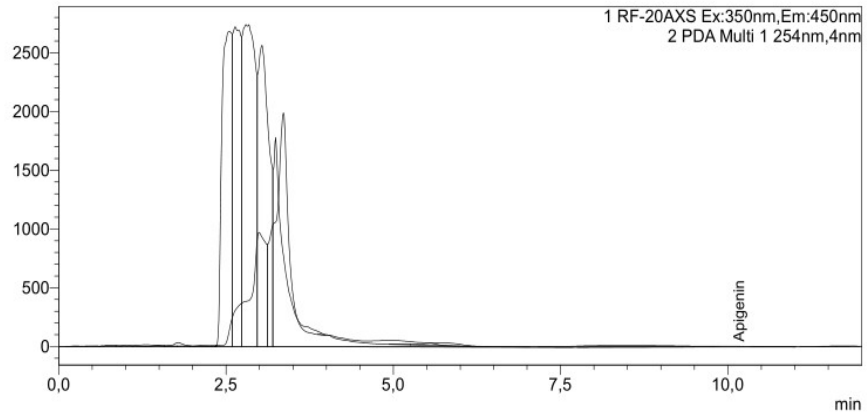

Figure 2. Chromatogram taken to determine the amount of apigenin in the plant using HPLC

In the chromatogram obtained experimentally using HPLC, apigenin contained in the root extract of golden vein plant gave a peak at 10.2 minutes based on a specific gradient. Thus, a quantitative analysis of flavonoids of medicinal golden root was carried out, and the analysis using HPLC gave the following results:

Table 1. The results of the quantitative analysis of polyphenols in the golden root using HPLC

Plant name	Gallic acid (мg %)	Routine (мg %)	Quercetin (мg %)	Apigenin (мg %)
Golden root	173,84	38,12	-	0,61

So, according to the results of the experimental analysis, quercetin was not found in the extract. But gallic acid (173.84 mg %), rutin (38.12 mg %), and apigenin (0.61 mg %) were found to be present. This led us to the conclusion that a natural medicinal product rich in BAC can be obtained from the root of this plant.

CONCLUSION

In order for the brain to be adequately repaired with metabolites, it is necessary to improve the blood microcirculation in the central nervous system, in this place biologically active flavonoids show such activity.

Golden vein extract is very effective for asthenia, during rehabilitation after severe diseases, hypotension. The extract was used in patients suffering from neurosis, vegetative-vascular dystonia and schizophrenia. It is also used to eliminate severe fatigue caused by physical work in healthy people and to treat infectious diseases. The plant has high antioxidant activity, affects metabolism and improves microcirculation [8].

We experimentally proved that the golden vein growing in the territory of Uzbekistan is rich in polyphenolic compounds with high biological activity. For this reason, we recommend the use of medicinal food supplements prepared on the basis of the medicinal golden plant for the purpose of providing oxygen to the central nervous system and improving memory. To improve the cognitive function of the central nervous system and strengthen memory, we suggest the use of medicinal golden plant and here are several suggestions:

1) Consumption of infusions made from plant leaves to stop and treat the process of memory loss observed in the elderly;

2) Regular consumption of phyto-tea made from the leaves of this plant for those who are easily irritated by events and incidents around them;

3) When it is difficult to concentrate, we suggest to consume tincture, syrup or natural food supplements made from the root of the golden vein plant.

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