

TO DEFINE THE ACCOUNT OF VITAMIN C IN SOME MEDICINAL PLANTS GROWING IN KASHKADARYA BASIN MOUNTAIN RANGES

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Abstract. *This paper involves the description of medical plants, preparation and quality of raw sources; chemical composition, indicators of application of the medicinal plants in the pharmaceutical industry and determination of vitamin C content on some medicinal plants growing in Kashkadarya basin adyr and mountain ranges. The amount of vitamin C in different vegetation periods in the medicinal plants which antioxidant properties were studied in Mentha, Ziziphora, Melissa, Rubus, Trichodesma, Bunium.*

Keywords. *Pasture, medicinal plants, vegetation, vitamin C, antioxidant, species, carotene, ketichines, flavonols, fruits, leaves, roots.*

INTRODUCTION

Kashkadarya region includes the Karshi depression in southern Uzbekistan, bordered in the north by the mountains of Koratepa, Zirabulok, and Ziyevuddin; in the east – by the foothills of the southwestern part of the Gisar ridge. As a result of the study, we analyzed the plant species of mountain pastures and determined the current state of pastures in the Kashkadarya Basin. According to the World Health Organization, 60% of available drugs are produced from medicinal plant raw materials. Raw material resources of naturally growing medicinal plants are also limited, and to study their protection, bio ecological properties, planned use from raw recourses and reproduction of raw materials are one of the urgent problems. Therefore, it is necessary to provide the needs of the pharmaceutical industry with raw materials by medicinal plants in Uzbekistan, to enrich the local flora with new introducible plant species and to develop technologies for their cultivation. It is also important to maintain the range of medicinal plants in mountainous and foothill areas. The description and distribution of wild plants, preparation and quality of raw materials from them, chemical composition, indicators of application in medicine of the medicinal plants in the pharmaceutical industry have been studied in the works of many scientists. The developed methodical manual on cultivation of medicinal plants should be provided to forestry workers, farmers, employees of the pharmaceutical industry, specialized specialists and students of higher education institutions specializing in the cultivation of

medicinal plants in the country. Assessing the current ecological status of medicinal plants will help to prevent future species from decline [1,3,5,6,8,9,10].

PROPOSED METHODOLOGY

Reagents: material of plant, 1% solution of hydrochloric acid, 1% solution of oxalic acid, 2,6-dichlorophenalinlidiphenol-0.001 N solution.

This method is based on the ability of ascorbic acid to recover 2,6-dichlorophenalinlidiphenol under acidic conditions. The reaction goes as follows: in this case, the dark blue color of the indicator (oxidized form) turns colorless (reversible form) with the addition of ascorbic acid [2,4].

Work schedule. Take 1-5 g of the medicinal plant material, grind it well in a porcelain mortar with the help of glass powder and continue crushing by adding 5 ml of a 1% solution of hydrochloric acid. Then we add another 15 ml of hydrochloric acid solution and pour the mixture into a 100 ml volumetric flask. The porcelain mortar is washed using oxalic acid and it is poured into the flask. Oxalic acid is used to fill the flask to a limited volume. The mixture in the flask is shaken and filtered. The amount of ascorbic acid in the filtrate is determined. Take two tubes, add 5-10 ml of filtrate to the first, 5-10 ml of a mixture of hydrochloric acid (1: 5) to the second and titrate with a solution of 0.001 N 2,6 - dichlorophenalinlidiphenol. The amount of ascorbic acid is determined as follows:

$$X = \frac{(a-b) T * 0,088 * 100}{C}$$

X – an amount of ascorbate acid in plant material, in mg /%.

a – an amount of indicator spent on the experiment.

T –correction, the amount of ascorbic acid equal to 0.088 - 1 ml of 0.001 N indicator solution.

C – the amount of examined plants, in gram.

b –the amount of indicator spent for control.

Vitamins play an important role in plant life. They are involved in enzyme biosynthesis. Some vitamins are involved in the metabolism of amino acids. Vitamin C, carotene, ketichines and flavonols are actively involved in the oxidation and reduction processes that they occur constantly in plant tissues. During this process, vitamins are oxidized and reversed over time.

Vitamin C is one of the most powerful antioxidants and it is important in oxidation-reduction processes. Vitamin C is found in all plants. Plants such as *Rosa*, *Ribes*, *Primula*, *Juglans* are rich in ascorbic acid, from which extracts, tinctures and concentrates are prepared and used in medicine.

We determined the amount of vitamin C in different vegetation periods in the medicinal plants whose antioxidant properties were studied in *Mentha*, *Ziziphora*, *Melissa*, *Rubus*, *Trichodesma* and *Bunium species*. The quality of biologically active substances in plants are the most important factors in determining their medicinal properties, that their medicinal properties.

From the first day, a plant begins to grow, the biosynthesis of vitamins begins in the tissue. Their amount is constantly changing during the growing season. This change depends on many factors. Typically, vitamin C is higher in plants growing in the northern regions and high rocky areas than in plants growing in southern regions and lowlands.

The results show that the amount of vitamin C depends on the growing season of medicinal plants (Table 1).

Table 1

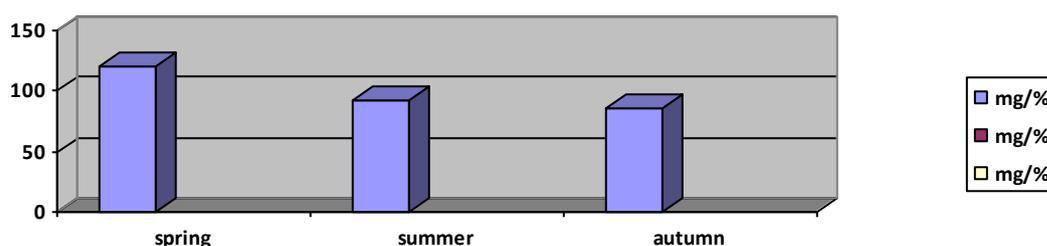
Vitamin C content (mg /%) during the vegetation season of some medicinal plants

№	The name of medicinal plants	spring	summer	autumn
1	<i>Mentha arvensis</i>	121 ± 2,2	92,4 ± 3,5	86,24 ± 5,1
2	<i>Ziziphora clinopodioides</i>	81,9 ± 1	58,08 ± 2,5	57,2 ± 4,1
3	<i>Melissa officinalis,</i>	76,56 ± 3,5	76,56 ± 3,5	81,8 ± 3,2
4	<i>Rubus caesius,</i>	123,2 ± 4,6	49,2 ± 4,1	36,9 ± 6,1
5	<i>Trichodesma incanum</i>	29.9 ± 2,5	60,72 ± 5,1	71,28 ± 5,3
6	<i>Bunium persicum</i>	26,4 ± 1,8	25,5 ± 2,2	68,3 ± 3,6

Our results show that vitamin C is present in the leaves of medicinal plants such as *Mentha arvensis*, *Ziziphora clinopodioides*, *Melissa officinalis*, *Rubus caesius*, *Trichodesma incanum* and *Bunium persicum*. Its highest amount is observed in *Rubus caesius* and *Mentha arvensis* in spring. Its content in *Rubus caesius* is 123.2 mg /%; *Mentha arvensis* involves about 121.2 mg /%, which was found in the spring.

Mentha arvensis L. It blooms in June-August, fruits ripen in September-October.

Its organs are the leaves and inflorescences. Essential oils and flavonoids are found in *Mentha* leaves. In addition to the low content of essential oils in Asian mentha, there are also additives, vitamins and catechins. Its decoction and tincture are widely used in medicine. Our results show that high levels of vitamin C were found in the spring at 121 ± 2.2 mg /%, 92.4 mg /% in the summer, and 86.24 mg /% in the autumn.



The amount of vitamin C, which exhibits antioxidant properties, in different seasons of mentha leaf plant (mg /%).

Ziziphora clinopodioides is one of the leading medicinal plants in the world.



Ziziphora clinopodioides

Ziziphora clinopodioides is found mainly on northern and southern slopes of mountainous areas. In folk medicine, *Ziziphora clinopodioides* is used in the treatment of diseases of the kidneys, heart, liver and gastrointestinal tract. Its tincture is widely used to improve heart function, lower blood pressure, and as a diuretic. The stems, leaves and inflorescences of the plant contain 2.5% of essential oils, vitamins C, E and A.

We have seen changes in the amount of vitamin C in the leaves of *Ziziphora clinopodioides* at different times of the year. We found that its content was high in spring, 81.9 mg /%, and almost the same in summer and autumn (Figure 2).

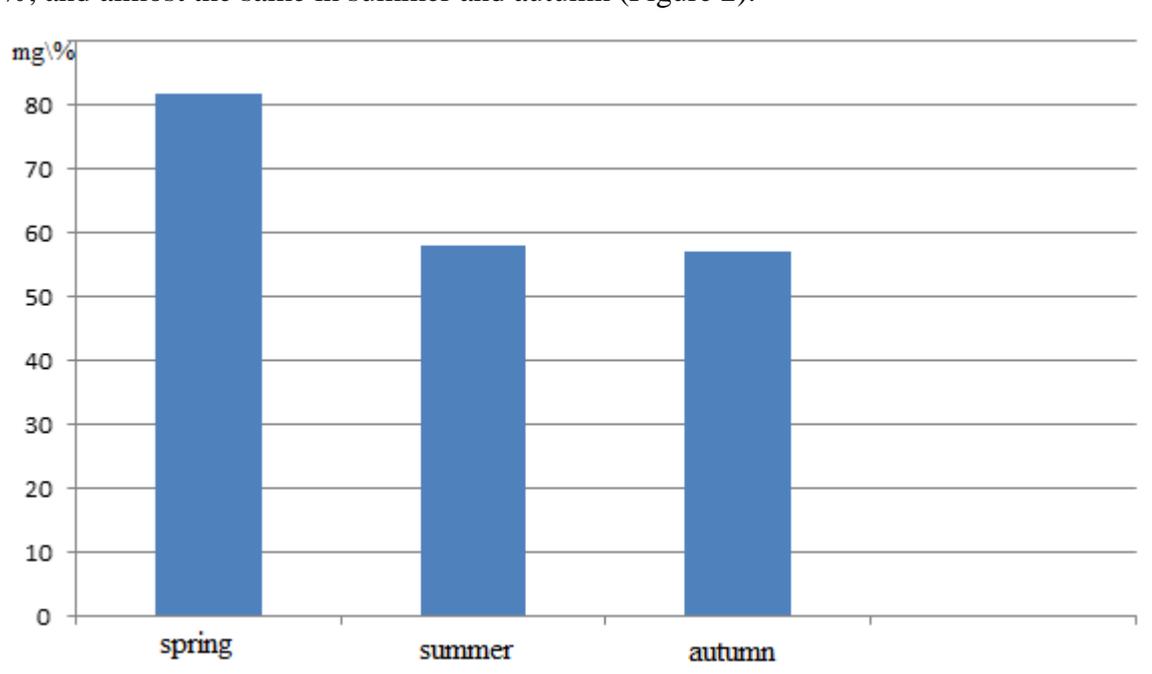


Figure 2. The amount of vitamin C, which exhibits antioxidant properties, in different seasons of *Ziziphora clinopodioides* (mg /%).

Rubus caesius. It blooms and matures from July to September. Its used organs: fruits, leaves and roots. There are vitamin C, carotene, nutrients in blue *Rubus caesius* leaves. There are large amounts of organic acids, vitamin C, cellulose, organic acids, sugars, B vitamins, nutrients, potassium salts, copper, margens in fruits of *Rubus caesius*. In folk medicine, it is used in the preparation of decoctions and tinctures from the branches. Our research has shown that the leaves of *Rubus caesius* contain vitamin C. Our studies determines that the highest amount of vitamin C in the medicinal plants under studying was in the spring, at 123.2 mg /% (Figure 3).

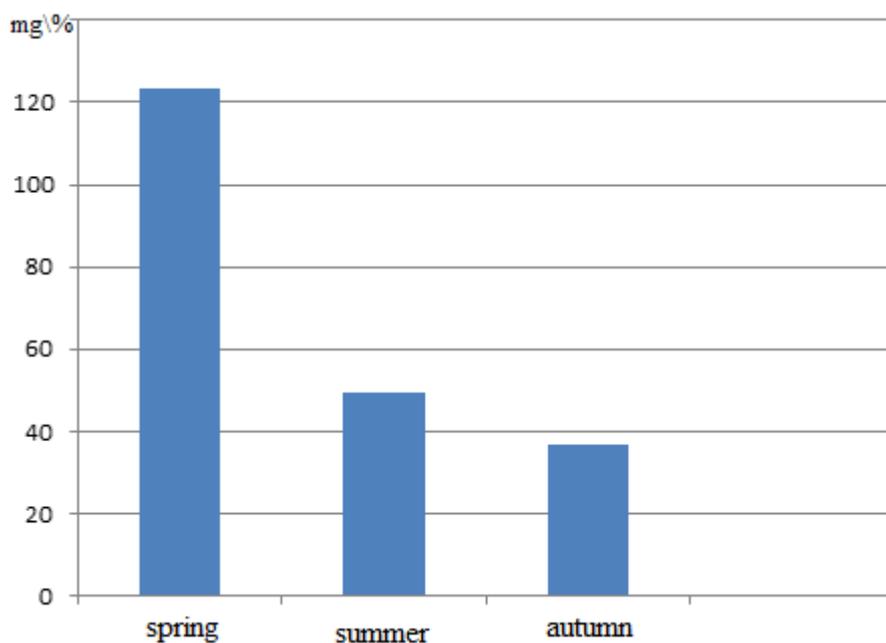


Figure3. The amount of vitamin C as antioxidants in different seasons of the *Rubus caesius* (mg /%).

Bunium persicum. It blooms in June, the fruit ends in July. *Bunium persicum* fruits contain 2.75 - 3.0% essential oil. The fruits contain about 20% oil, 15% protein and minerals. Its fruits are used in medicine.



Bunium persicum

Based on our results, it can be said that *Bunium persicum* leaves contain vitamin C. High levels of vitamin C in *Bunium persicum* leaves were found to be 68.3 mg /% in the autumn (Figure 4).

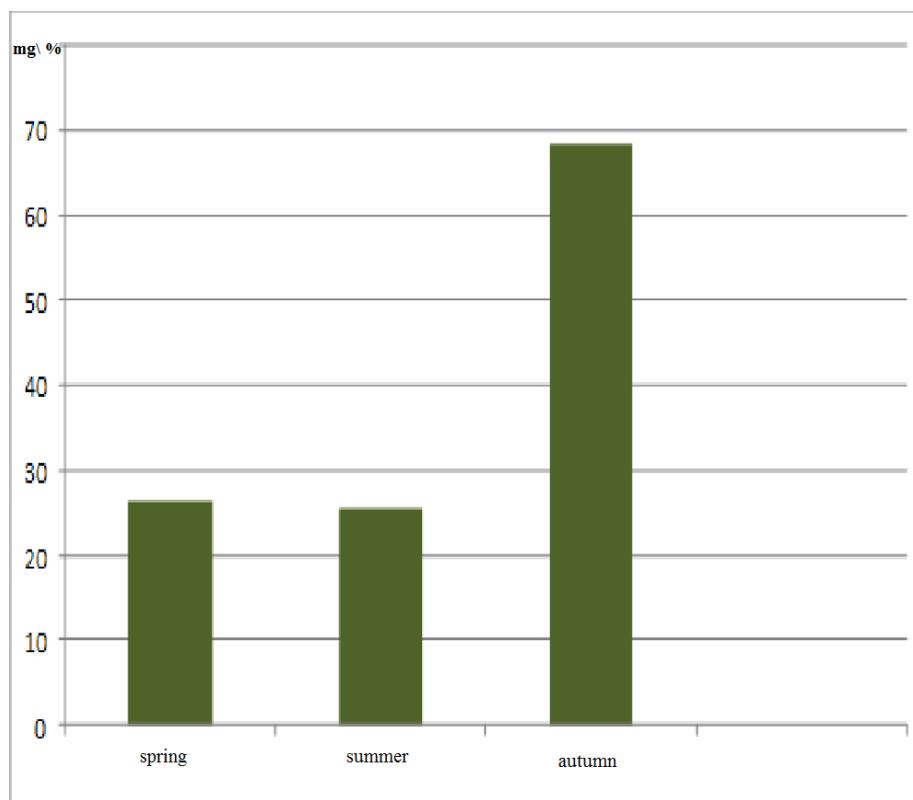


Figure 4. Vitamin C content in different seasons of the *Bunium persicum* (mg /%), which exhibits antioxidant properties.

Melissa officinalis. It blooms in June-August, fruits ripen in July-August. Its organs used are the lead-off parts of leaves and twigs. *Melissa officinalis* contains essential oils, nutrients, vitamin C, urosolic and other acids. In folk medicine, decoctions and tinctures of *Melissa officinalis* are used. Our results showed that the amount of vitamin C in the leaves of *Melissa officinalis* was 76.56 mg /% in spring, 92.4 mg /% in summer and 81.8 mg /% in autumn.



Melissa officinalis

***Trichodesma incanum* (Bunge) ADC.** The plant is widespread in Central Asia. It contains alkaloids. Alkaloids are common in its seeds. Strong alkaloids were also found in the leaves. The amount of vitamin C in the leaves was found to be 29.9 mg /% in spring, 60.72 mg /% in summer, and 71.28 mg /% (Figure 5).



Trichodesma incanum (Bunge) ADC.

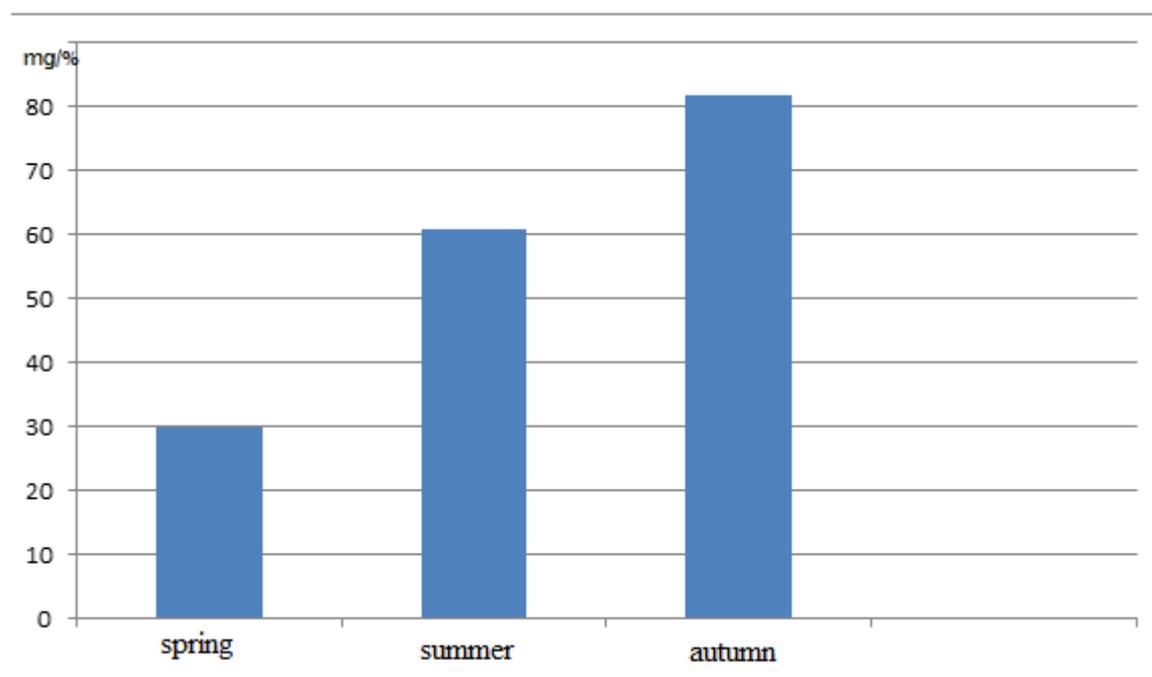


Figure 5. The amount of vitamin C, which exhibits antioxidant properties, in different seasons of the *Trichodesma incanum* (Bunge) ADC. (mg /%).

CONCLUSION

Thus, vitamin C content was defined in the leaves of medicinal plants such as *Mentha arvensis* L., *Ziziphora clinopodioides*, *Rubus caesius*, *Melissa officinalis*, *Trichodesma incanum*

and *Bunium persicum* (Boiss.) B. Fedtsch and the highest amount of vitamin C was observed in the spring.

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