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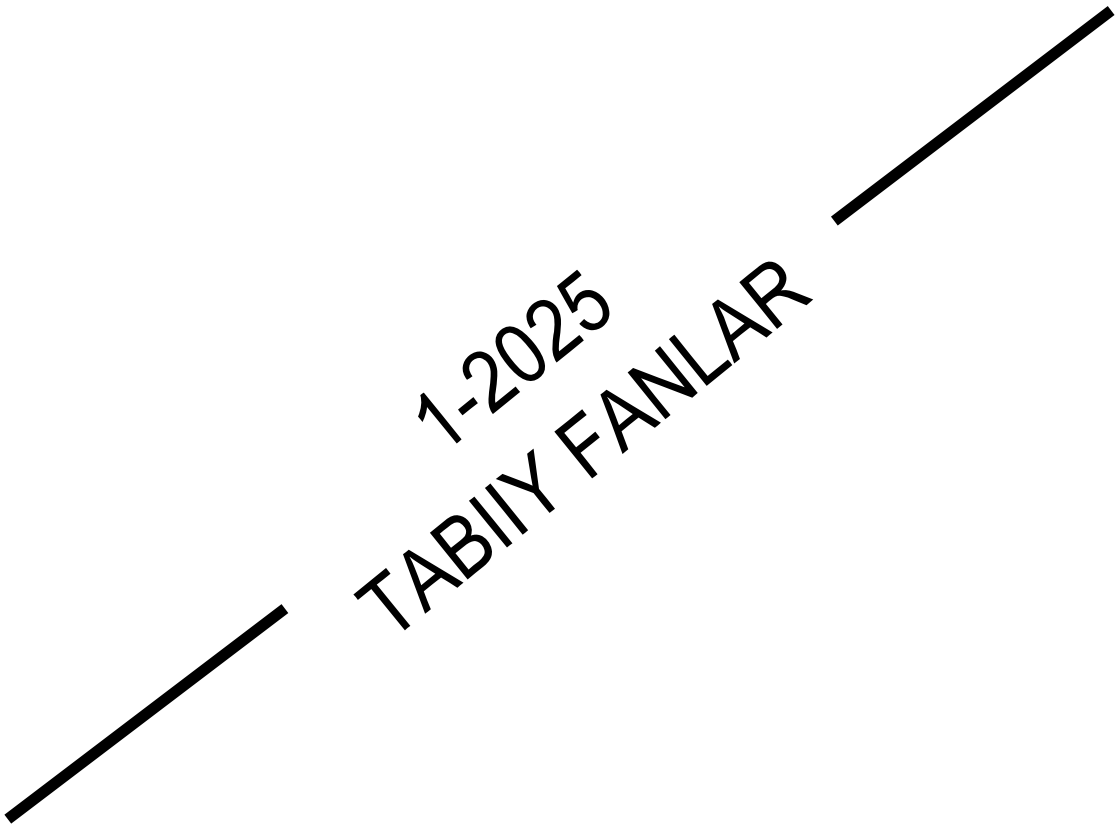

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STUDY OF ANTIOXIDANT ACTIVITY OF A MIXTURE PREPARED FROM TRIBULUS MACROPTERUS, TARAXACUM OFFICINALE AND INULA HELENIUM

TRIBULUS MACROPTERUS, *TARAXACUM OFFICINALE* VA *INULA HELENIUM* DAN TAYYORLANGAN ARALSHMANING ANTIOKSIDANT FAOLLIGINI O‘RGANISH

ИЗУЧЕНИЕ АНТИОКСИДАНТНОЙ АКТИВНОСТИ СМЕСИ, ПРИГОТОВЛЕННОЙ ИЗ TRIBULUS MACROPTERUS, TARAXACUM OFFICINALE И INULA HELENIUM

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Annotatsiya

Ushbu maqolada Farg‘ona vodiysida o‘sadigan Tribulus macropterus, Taraxacum officinale, Inula helenium o‘simliklaridan tayyorlangan arlashmalarning antioksidant faolligini o‘rganish natijalari keltirilgan. Bu o‘simliklardan tayyorlangan turli arlashmalarning antioksidant faolligi spektrometrik usulda o‘rganilgan. Antioksidant faollik standart sifatida olingan adrenalin va vitamin C ga nisbatan solishtirib turli vaqt oralig‘ida tahlil qilindi. Olingan natijlarga 7,5 qism(Tribulus macropterus va Taraxacum officinale -1:1) va 2,5 qism Inula helenium o‘simliklaridan tayyorlangan aralashma adrenalin va vitamin C ga nisbatan yuqoriroq antioksidantlik xususiyatini namoyon qildi.

Аннотация

В статье представлены результаты изучения антиоксидантной активности смесей, приготовленных из растений Tribulus macropterus, Taraxacum officinale и Inula helenium, произрастающих в Ферганской долине. Спектрометрическим методом изучена антиоксидантная активность различных соединений, полученных из этих растений. Антиоксидантную активность сравнивали с адреналином и витамином С, принятыми за эталон и анализируемыми в различные временные интервалы. Результаты показали, что смесь, приготовленная из 7,5 частей (Tribulus macropterus и Taraxacum officinale - 1:1) и 2,5 частей растений Inula helenium, проявляла более высокие антиоксидантные свойства по сравнению с адреналином и витамином С

Abstract

In this article, presents the results of studying the antioxidant activity of mixtures prepared from Tribulus macropterus, Taraxacum officinale and Inula helenium plants growing in the Fergana Valley. The antioxidant activity of various compounds prepared from these plants was studied by spectrometric method. Antioxidant activity was compared to adrenaline and vitamin C taken as a standard and analyzed at different time intervals. The results showed that the mixture prepared from 7.5 parts (Tribulus macropterus and Taraxacum officinale -1:1) and 2.5 parts of Inula helenium plants showed higher antioxidant properties compared to adrenaline and vitamin C.

Kalit so‘zlar: *osimlik, temirtikan, qoqio‘t, andiz, aralshma, antioksidant faollik, adrenelin, vitamin C.*

Ключевые слова: *растение, якорцы крупнокрылые, одуванчик лекарственный, девясил высокий, смесь, антиоксидантная активность, адреналин, витамин С.*

Key words: *plant, Tribulus macropterus, Taraxacum officinale, Inula helenium, mixture, antioxidant activity, adrenaline, vitamin C*

INTRODUCTION

Antioxidants are molecules that impede the oxidation of alternative molecules and are widely worked in dietary additions. Antioxidant performance is the common capacity of antioxidants

to spoil loose radicals in cells and nourishment. Antioxidant performance is widely argued in the literature because oxidation is related with a number of illnesses, like cancer.

LITERATURE ANALYSIS AND METHODS

Plant antioxidants are a organic origin of bioactive combinations. They figure in plant modification and alteration to environmental provocations, but are also helpful for persons well-being. As sessile organisms, plants cannot be released from environmental provocations of natural source (e.g., temperature, water availability, soil configuration, pests) or anthropogenic effects (e.g., provenance demolition, contamination). Varied abiotic causes, excluding contamination, as well as nutrient lacknesses, temperature situations, water store, brightness potency, circadian rhythms, and radiation, change the equity between the creation and intake of reactive oxygen type (ROS) and trigger an event known as oxidative pressure [1]. Despite the fact that ROS are crucial for usual plant rise and revolution and play an essential position in signal transduction, they can promote cellular harm [2]. Consequently, preserving oxidative equity is important for plant modification to pressure. To stop oxidation, plants have an sizable antioxidant protection organization consisting of enzymes and metabolites. Ascorbate (AsA, vitamin C) and glutathione (GSH) are the finest water-soluble antioxidant metabolites, and secondary metabolites such as polyphenols, flavonoids and terpenoids are required in ROS detoxification under different environmental pressures [3]. Most of the secondary metabolites of these plants exhibit biological activity opposed to insects, fungi and other microorganisms [4], which is the foundation for their healing usage. The quantity and quality of secondary metabolites are intended on, on the one hand, by the particular features of the plant (e.g., evolution phase), and on the other hand, by the habitat [5, 6]. Since environmental causes can affect the creation of antioxidants and secondary metabolites, this, in turn, affects the nutritional and healing importance of the plant for persons well-being [7]. A big body of proof proves that antioxidants included in nutriments and goods of plant genesis have many biomedical appeals. These antioxidants play a role in the prevention and extra medical care of non-communicable persistant illness such as cardiovascular, inflammatory and neurodegenerative illness, metabolic syndrome and cancer [8]. Antioxidants are separated into different classes, but low molecular mass composites such as terpenoids, alkaloids and, mainly, polyphenols are of total curiosity. Polyphenols are a divesity of pharmacologically active phytochemicals that are mostly explored for their capacity to delay or hold back oxidative operations that happen as a result of certain cellular pathological circumstances [9]. As phytochemical powerhouses, plants also include notable quantities of nutrients that are essential for encouraging health. A stunning method is to use the certain nutritional importance of a number of plants full of nutrients, vitamins, minerals, and phenolic composites to grow new formulations and good commercial products. These bioproducts are known as practical nutriments, nutraceuticals, cosmetics, and food additions, which are known to be at the crossing of nutrition and medicine [10].

To determine the antioxidant activity, three types of mixtures were prepared from the plants tribulus, fennel and oris. 1st sample 7.5 parts (Tribulus macropterus and Taraxacum officinale -1:1) and 2.5 parts *Elecampane helenium;*2- sample 5 parts (Tribulus macropterus and Taraxacum officinale -1:1) and 5 parts *Elecampane helenium* and 3- sample 7.5 parts (Tribulus macropterus and Taraxacum officinale -1:1) and 2.5 parts *Elecampane helenium* consisted of

*Determination of antioxidant activity of samples.*The samples submitted for analysis are assessed by the method of inhibition of the adrenaline autoxidation reaction in vitro, i.e. the ability of adrenaline to inhibit the autoxidation reaction and simultaneously prevent the formation of reactive oxygen species (ROS). expressed as a percentage (AF%).

A sample extract was prepared by boiling 0.75 g of the plant sample in 50 ml of water for 10 min. The resulting extract was passed through a 0.45 μm syringe filter and used for analysis.

For this purpose, 3 ml of 0.2 M carbonate (Na2CO3-NaHCO3, pH=10.65) buffer and 0.15 ml of 0.18% adrenaline tartrate solution were added, mixed quickly and K7000 (YOKE, China) was dissolved in a 10 mm thick cuvette. mm) optical density D1 at a wavelength of 347 nm was determined every 30 seconds for 10 minutes in a spectrophotometer (Table 1).

0.045 ml of the test plant extract, 3 ml of the buffer solution and 0.15 ml of 0.18% adrenaline tartrate solution were mixed in the above manner and the optical density was measured

at a wavelength of 347 nm (D2), 0.05 mg/ml as a control. A vitamin C solution with a concentration of 0.18% was obtained (Fig. 1).

Table 1

Measured optical densities of adrenaline and samples:

Time, sec	Adrenalin (D1)	Vitamin C (D2)	Sample-1 (D2)	Sample-2 (D2)	Sample-3 (D2)
0	0.038	0.031	0.047	0.056	0.031
30	0.078	0.063	0.092	0.104	0.061
60	0.118	0.094	0.135	0.15	0.091
90	0.158	0.128	0.176	0.192	0.118
120	0.195	0.155	0.215	0.23	0.144
150	0.23	0.174	0.25	0.264	0.168
180	0.261	0.196	0.282	0.293	0.19
210	0.29	0.216	0.31	0.318	0.21
240	0.316	0.234	0.334	0.34	0.227
270	0.338	0.249	0.355	0.358	0.243
300	0.358	0.263	0.374	0.373	0.257
330	0.375	0.275	0.39	0.386	0.27
360	0.39	0.286	0.404	0.397	0.28
390	0.402	0.295	0.415	0.406	0.29
420	0.413	0.304	0.426	0.414	0.299
450	0.424	0.312	0.434	0.42	0.307
480	0.432	0.319	0.441	0.426	0.313
510	0.439	0.325	0.448	0.431	0.319
540	0.445	0.331	0.453	0.435	0.325
570	0.451	0.337	0.457	0.439	0.33
600	0.456	0.342	0.462	0.442	0.334

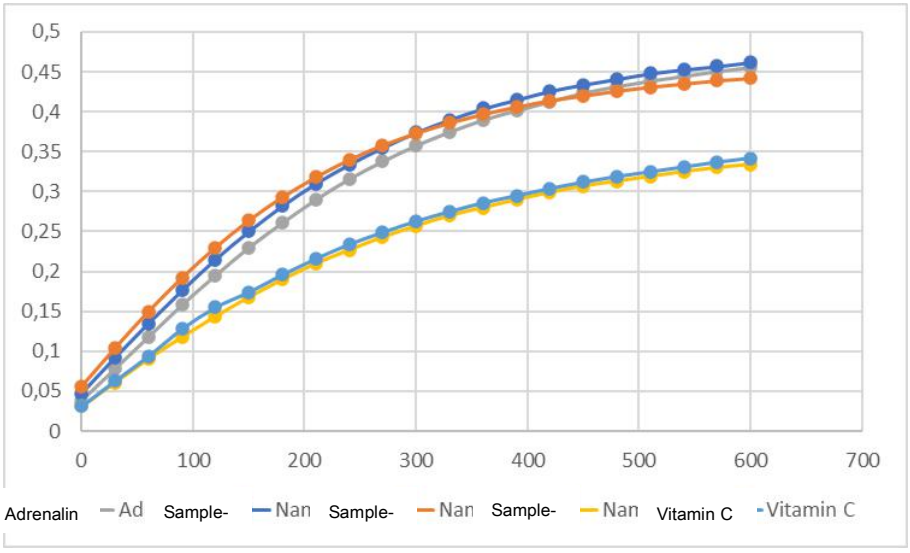

Figure 1. Graph of increase in optical density of adrenaline and samples (l=347 nm).

The antioxidant activity of the studied samples is expressed as a percentage (AF%) of adrenaline autooxidation inhibition and is calculated using the following formula:

$$AF = \frac{(D_1 - D_2) \cdot 100}{D_1}$$

Here, the optical density of adrenaline tartrate solution is added to buffer D1, the sample extract is added to buffer D2, and the optical density of adrenaline tartrate is added to buffer D2.

RESULTS AND DISCUSSION

Plant samples prepared from Tribulus, Gokyota and Inula (1stsample 7.5 parts (Tribulus macropterus and Taraxacum officinale -1:1) and 2.5 parts *Elecampane helenium;* 2-Whatsample 5 parts (*Tribulus macropterus* And *Taraxacum officinalis*-1:1) and 5 parts *Elecampane helenium* and 3-Whatsample 7.5 parts (*Tribulus macropterus* And *Taraxacum officinalis*-1:1) and 2.5 parts *Elecampane helenium*) antioxidant activity was studied spectrophotometrically after 1-10 minutes in comparison with adrenaline and vitamin C. A. plant samples. The results of inhibition of active oxygen species during the antioxidant activity of aqueous extracts are presented in Table 2. The prepared samples 1 and 2 showed negative antioxidant activity compared to vitamin C. Sample 3 showed high antioxidant activity compared to vitamin C. According to the obtained results, 3 samples of treated plant samples, a mixture consisting of 2.5 parts (tribulus and saffron - 1:1) and 7.5 parts andes, showed high antioxidant activity.

Table 2.

It has been established that aqueous extracts of plants with antioxidant activity inhibit CFS over time.

Discharge under investigation	AF, %			
	Vitamin C	Sample-1	Sample-2	Sample-3
1st minute	20.34%	-14.41%	-27.12%	22.88%
3rd minute	24.90%	-8.05%	-12.26%	27.20%
5th minute	26.54%	-4.47%	-4.19%	28.21%
10th minute	25.00%	-1.32%	3.07%	26.75%
Average	**24.19%**	**-7.06%**	**-10.12%**	**26.26%**

Conclusion about It can be said that the extract of sample 3 has a higher antioxidant property compared to the other samples.

CONCLUSION

The antioxidant activity of mixtures prepared from tubular, sedum and andis plants with adrenaline and vitamin C was compared using a spectrophotometric method. According to the results obtained, 7.5 parts (*Tribulus macropterus* And *Taraxacum officinalis*-1:1) and 2.5 parts *Elecampane helenium.* The mixture prepared from plants showed higher antioxidant properties compared to adrenaline and vitamin C. The mixture of the above plants is recommended for the preparation of various biologically active supplements.

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