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STUDY OF ANTIOXIDANT ACTIVITY OF SEA BUCKTHORN AND UTRICA PLANT

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Annotation

Today, it is no secret that medicinal plants play an important role in the prevention and treatment of various diseases in modern and traditional medicine. Recently, great attention has been paid to the study of the pharmacological effects of various drugs using in vivo and in vitro tests. It is known that medicinal plants such as sea buckthorn and utrica are rich in natural antioxidants. This article presents the healing properties and benefits of sea buckthorn and utrica plants. The antioxidant properties of Sea buckthorn and utrica plants were studied.

How to Cite

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Introduction.

Today, it is no secret that medicinal plants play an important role in the prevention and treatment of various diseases in modern and traditional medicine. In the development of this field, along with representatives of local flora, introduced plants also have a healthy contribution. In particular, a number of plants have been acclimatized in our country, and they are mainly used in the greening of cities and creation of eco-parks, in the food, perfumery and pharmaceutics industry.

Theoretical part.

Recently, great attention has been paid to the study of the pharmacological effects of various drugs using in vivo and in vitro tests. It is known that medicinal plants such as chakanda and gazanda are rich in natural antioxidants. Every substance contained in medicinal plants is useful for the body. The quantity and quality of biologically active substances in the plant is one of the most important factors in determining their healing properties. It is one of the medicinal plants used in the treatment of many diseases.

Sea buckthorn, (Hippophae rhamnoides L) is a shrub up to 10 meters long, with 0.5-7 cm thorns on its branches. There are two types of thorns: small (up to 0.5 cm long), always found at the end of fruit branches. Sea buckthorn`s oil contains vitamins E, K. Sea buckthorn`s fruit juice contains vitamins A, C, B1, B2, B6, E, K. Sea buckthorn`s fruits also contain amino acids, such as alanine, phenylalanine, glutamine, cysteine, leucine, lysine, arginine, serine, valine, and others. In addition, fruits contain essential oils, micro- and macroelements, and 8% of oil is found in fruits.

Utrica (Utrica L.) is a group of annual herbs belonging to the family of gazanda. The leaves are serrated, divided into pieces, opposite. The leaves and stems are covered with prickly hairs. The flowers are very small, unisex, collected in spike-like inflorescences in the leaf axils. The fruit is a nut. Less in the North, in the Southern Hemisphere and in the tropics, 40-50 species are distributed. There is one type in Uzbekistan. Utrica grows in marshes, fields, gardens and other places. Young shoots are eaten.

This plant is used as an excellent tool for human health. Utrica plant contains tannins, vitamins, pantothenic acid, acetic acid, folic acid, gallic acid, phytoncides, flavonoids.

Experimental part:

Determination of antioxidant activity of plant extracts by the method of inhibition of autoxidation reaction of adrenaline in vitro.

Phytochemical studies of plant extracts have evaluated their antioxidant activities using several methods.

The antioxidant activity of the investigated substances in vitro is assessed by the ability to inhibit the autooxidation reaction of adrenaline and at the same time prevent the formation of reactive oxygen species (ROS). The antioxidant activity of the investigated substances is expressed in percent (AF%) according to the inhibition of autoxidation of adrenaline.

One of the common methods used to determine the antioxidant activity of extracts from plant materials is to evaluate the antioxidant activity of the tested substances in vitro by their ability to inhibit the autoxidation reaction of adrenaline and at the same time prevent the formation of reactive oxygen species (ROS).

For this, 4 ml of 0.2 M carbonate buffer (Na_2CO_3-$NaHCO_3$, pH=10.65) and 0.2 ml, 0.002 ml of 0.18% solution of adrenaline hydrochloride were placed in a cuvette with a thickness of 10 mm in a K-7000 spectrophotometer (andru instruments, China). Optical density D1 at 347 nm wavelength was determined by rapid stirring from 30 seconds to 10 minutes.

0.06 ml of the examined plant extract, 4 ml of the buffer solution and 0.002 ml of the 0.18% solution of adrenaline hydrochloride are taken and mixed in the above manner, and the optical density at a wavelength of 347 nm is measured (D2).

The antioxidant activity of the tested substances is expressed in percentages (AF%) based on the inhibition of autoxidation of adrenaline and is calculated as follows:

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

Here, optical density of adrenaline hydrochloride solution added to buffer D1, optical density of plant extract and adrenaline hydrochloride added to buffer D2.

Aqueous extracts of plants with antioxidant activity have been found to inhibit KFSh over time:

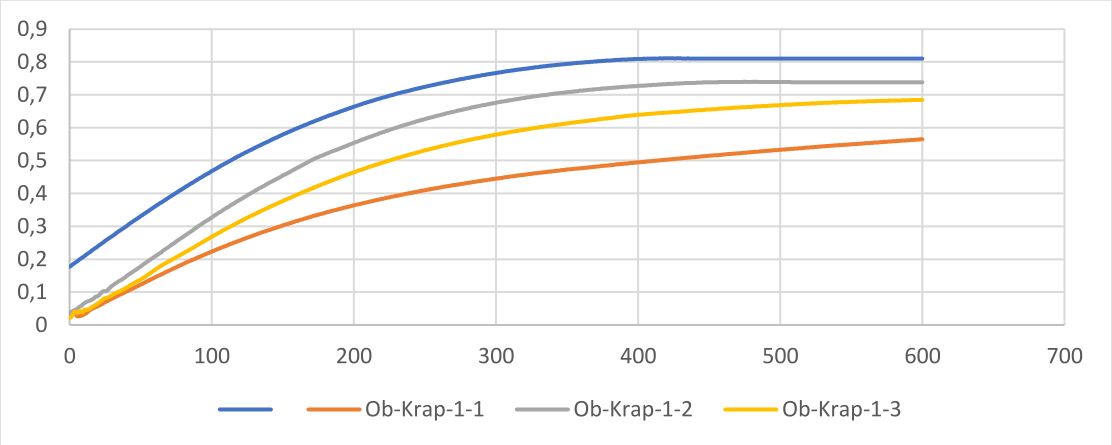
Table 1. Antioxidant content and retention times of standard samples

Time,sec	sea buckthorn 50% utrica 50%	sea buckthorn 25% utrica 75%	sea buckthorn 75% utrica 25%
0	85,45	79,14	88,16
180	44,97	17,83	31,69
300	42,03	11,87	24,57
600	24,6	8,89	15,5

Table 2. Measured optical densities of epinephrine and samples

Time,sec	Adrenalin D_1	sea buckthorn utrica 1:1 (D_2)	sea buckthorn utrica 1:2 (D_2)	sea buckthorn utrica 1:3 (D_2)
0	0,1774	0,0258	0,037	0,021
30	0,271	0,0808	0,12	0,0917

60	0,3601	0,1447	0,2085	0,168
90	0,4425	0,2052	0,2986	0,2431
120	0,5162	0,2573	0,3814	0,3152
150	0,5793	0,3029	0,4544	0,3773
180	0,6326	0,3415	0,5198	0,4321
210	0,6779	0,374	0,5703	0,4796
240	0,7142	0,4016	0,6138	0,5195
270	0,743	0,4254	0,6483	0,5521
300	0,7662	0,4451	0,676	0,5791
330	0,7849	0,4627	0,697	0,6008
360	0,7979	0,4772	0,7126	0,6188
390	0,8073	0,4904	0,7242	0,6348
420	0,8109	0,5029	0,7326	0,6458
450	0,81	0,5149	0,738	0,6556
480	0,8105	0,5256	0,7394	0,6634
510	0,8105	0,5361	0,7384	0,6708
540	0,8105	0,5467	0,7384	0,677
570	0,8105	0,5557	0,7384	0,6812
600	0.8105	0.5645	0.7384	0.6848
510	0,8105	0,5361	0,7384	0,6708
540	0,8105	0,5467	0,7384	0,677
570	0,8105	0,5557	0,7384	0,6812
600	0.8105	0.5645	0.7384	0.6848



Picture 1. Antioxidant activity determination graph of sample extract

The antioxidant activity of the plant extracts studied above was determined by the method of inhibition of the autooxidation reaction with adrenalin in vitro. As a result of studies, it was found that the antioxidant activity of all samples is higher than 10%, that is, they have antioxidant activity. Using this method, taking into account that sample 1 has a high antioxidant capacity in the ratio of 1/1, it allows the use of sea buckthorn, utrica plants and food additives prepared on their basis as a source of antioxidants.

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