

DETERMINATION OF ANTIOXIDANT ACTIVITY OF ADRENALIN IN IN VITRO CONDITIONS OF INULA HELENIUM L. (BLACK ANDIZ) PLANT ROOT POWDER AND EXTRACT.

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¹Gaybullaeva O.O., ²Mustafakulov M.A., ³Misirov S.Ch., ⁴Islamov A.Kh.,
⁴Ashurov J.M.

¹Navoi State University, Faculty of Natural Sciences, Department of Biology.

E-mail: ozodagaybullayeva28081992@gmail.com

²M.Ulug'bek nomidagi O'zMU huzuridagi, Biofizika va biokimyoy instituti

³O'zbekiston Respublikasi Qurolli kuchlari akademiyasi

⁴Institute of Bioorganic Chemistry named after academician O.S. Sodikov of the Academy of Sciences of the Republic of Uzbekistan, 100125, Tashkent city,

Abstract:

In this article, *Inula helenium* L., which grows in Khatirchi district of Navoi region. To determine the antioxidant activity of tannins, terpenoids, flavonoids contained in the root powder and extract of the plant (black andise) and the antioxidant activity of adrenaline (epinephrine) in vitro. Also *Inula helenium* L. (black andise) root powder and extract based on 4 different samples in 5 different concentrations of 100/250/500/750/1000 µg/ml and comparing the working substances with epinephrine screening and standard antioxidant quercetin and gliclazide antioxidants information about it is highlighted.

Key words

Inula helenium, powder, extract, In vitro, tannin, terpenoid, flavonoid, antioxidant, quercetin, gliclazide, sodium carbonate, sodium bicarbonate, spectrophotometer,

INTRODUCTION:

The plant *Inula helenium* L is an antiseptic, anti-inflammatory and anti-helminthic drug that has been used in medicine for a long time. Ibn Sina used it in his time for various diseases, including as a chest cleanser and expectorant. In folk medicine, a decoction made from rhizomes and roots is still used as an expectorant for pulmonary tuberculosis and respiratory tract colds, a fever reducer, and a diuretic and dewormer. Antioxidants are biologically active compounds of great importance in plant and animal organisms. Antioxidants are substances that

prevent chain reactions that cause free radicals and are dangerous for the body. Cells are constantly breaking down in our body. One of these processes is oxidation. This oxidation process is caused by free radicals. Therefore, antioxidants are considered substances that slow down the aging of the body. Antioxidants are vitamins, minerals, and other nutrients that help repair damaged cells. The best antioxidants are vitamin C, zinc, vitamin A, vitamin E, and selenium. Vitamin C is abundant in berries, broccoli, citrus fruits, spinach, sweet peppers, tomatoes, and cauliflower. Zinc is abundant in oysters, meat, peas, nuts, milk, and seafood. Vitamin A is abundant in apricots, broccoli, red peppers, tomatoes, corn, and carrots. Vitamin E is abundant in broccoli, carrots, nuts, spinach, and sunflower. [1 - 2]

The purpose of the research is to in vitro conditions *Inula helenium* L. It consists in determining the antioxidant activity of the root powder and extract of the (black andis) plant.

As the object of the study, local *Inula helenium* L. Root powder and extract of the (black andis) plant and Gliclazide were obtained.

Research materials and methods. Antioxidant activity is determined through phytochemical investigations of the experimental preparations and evaluated using several methods.

The antioxidant activity of the drugs is determined by the inhibition of the autoxidation reaction of adrenaline in vitro and prevents the formation of the free form of oxygen. The method is based on the inhibition of the autoxidation reaction of adrenaline. It is expressed in percentages (%) due to the formation and autoxidation of adrenalin during the time in the in vitro conditions of the preparations. For this, 2.0 ml of 0.2 M sodium-carbonate-sodium bicarbonate ($\text{Na}_2\text{CO}_3\text{-NaHCO}_3$) pH=10.65 buffer, 56 $\mu\text{g}/\text{ml}$ of a 0.18% solution of adrenaline (epinephrine) hydrochloride, 30 $\mu\text{g}/\text{ml}$ of antioxidant the drug is added and examined in a Cary 60 UV-Vis Agilet Technologies spectrophotometer in a 10 mm cuvette at a wavelength of 347 nm for 30 seconds to 10 minutes with rapid mixing. The amount of the extract under study (concentration of 1 mg in 1 ml) is used as a standard. 0.2 M 2.0 mL buffer, 0.18% 56 $\mu\text{g}/\text{mL}$ (5.46 mM) adrenaline is used as a control sample.

The antioxidant activity was expressed in percentages according to the inhibition of autoxidation of adrenaline and was calculated by the following formula.

$$AA\% = \frac{D1 - D2 \times 100}{D1}$$

optical density of adrenaline hydrochloride solution added to D₁-buffer;

Optical density of the investigated extract and adrenaline hydrochloride added to D₂-buffer. Statistics were checked with Student's t-test and Origen 6.1 USA software. [3]

THEORETICAL PART:

Inula helenium L plant species is a perennial herb 100-150 cm tall with one or more stems, erect, erect, branched at the top. The root leaf is long-banded, large (the leaf plate is up to 50 cm), elliptic or oblong-ovate, with a sharp tip, narrowing towards the base. The leaves on the stem are smaller, oblong-ovate, and become smaller as they reach the top of the stem. The leaf plate has a serrated edge, the upper side is sparse and hard hairy, and the lower side is soft and hard. The leaves on the upper part of the stem are unbanded, and the lower leaves are arranged in a row on the stem with a short band. The flowers are golden in color and gathered in a basket. Baskets form a shield-shaped or shingle-shaped flower cluster at the top of the stems and branches. The folded leaves of the basket are arranged like cherepitsa. The leaves are ovate, curved and covered with many hairs. The flowers on the edge of the basket are yellow, tongue-shaped, and those in the middle are also yellow, fluffy, tubular. The calyx leaves of the flowers are turned into tufts, the corolla and paternity are 5, the maternal node is one-digit, located below. The fruit is an elongated, four-sided, brown or brown pistachio.

The finished product of *Inula helenium* consists of long, thick roots and short, thick and multi-headed rhizomes of various shapes. The root and rhizome are 2-20 cm long, 1-3 cm thick, covered with wrinkled gray-brown bark. The inside of the product is yellowish-white. There are shiny brown spots where the essential oil is. The product is fragile, it does not break horizontally. The root and rhizome have a unique aromatic strong smell and a more bitter and pungent taste. It blooms from May-July to September, the fruit ripens in July-October. Above-ground part of *Inula helenium* L plant Fig. 1 [4-7]



Figure 1. A view of *Inula helenium* L. ground surface and crushed root

Inula helenium product moisture content 13%, total ash 10%, ash insoluble in 10% hydrochloric acid 4%, internal rot, old rhizome and root, basal part of the stem and other parts of the root 5%, blackened internal rhizome and roots 5%, Root pieces shorter than 2 cm (for whole, untrimmed product) 5%, with a hole diameter of 7 mm Large pieces that do not pass through a sieve (for trimmed product) 10%, with a hole diameter of 0.5 mm Sieve fraction (for shredded product) should be 10%, organic impurities 0.5% and mineral impurities no more than 1%.

The chemical composition of the Inula helenium plant contains 1-3% essential oil, up to 44% inulin and other carbohydrates, a small amount of alkaloids, acetic and benzoic acids, and saponins. The essential oil is a rapidly solidifying crystalline mass. has a unique smell and taste. The crystalline part of the essential oil - gelenin consists of a mixture of three sesquiterpene lactones (alantholactone, isoalantolactone and dihydroalantholactone). In addition to gelenin, the essential oil also contains a small amount of alantol and proazulene. The above-ground part of the plant contains up to 3% essential oil, and the leaves contain a bitter substance called alantopicrine.

Medicinal use of the plant Inula helenium L. Andis species is used as an expectorant and for stomach and intestinal diseases. The essential oil has an antiseptic, anthelmintic and anti-inflammatory effect. Its anthelmintic property is due to the presence of active substances similar to santon - alantolactones. Allanton medicinal preparation is obtained from the rhizome and root of black andis. Allanton is the sum of sesquiterpenes of the product, it has anti-inflammatory, vasoconstricting and antiseptic effects and soothes the wound adhesion in peptic ulcer disease. [4-7]

RESULTS OBTAINED AND THEIR ANALYSIS.

Antioxidants are important in performing the function of natural detoxification systems in removing free radicals and radical forms from the body. Natural antioxidants include ascorbic acid, citric acid, polyphenols, flavonoids, carotenoids, cysteine, phospholipids, tocopherols, vitamins A and K. It is known that fruits and vegetables are rich in antioxidants, and it is useful to eat them raw regularly. Antioxidants are found in large quantities in the following products: blueberries, black plums, all types of beans, walnuts, almonds, peanuts, sunflower seeds, garlic onions, etc. Also, general antioxidants were determined in the leaves of chestnut, peach, and walnut in different seasons. Also, the amount of antioxidant vitamin C was determined in the leaves of various fruit trees: walnut, peach, blackberry, cherry, vine, and it was shown that its amount depends on the

vegetation period of the plants. They are used as tinctures and liquid extracts in the treatment of a number of diseases. Natural antioxidants protect the body from free radicals, increase its resistance to various adverse external effects and slow down the aging process. Natural antioxidants can be used to correct many diseases. A lack of antioxidants in the body causes a number of diseases. Antioxidant property has been studied in some medicinal plants such as licorice, yarrow, marigold, chamomile, and shovel. Determination of the amount of total antioxidants in medicinal plants is of the most important biological significance. *Inula helenium* L. growing in Khatirchi district of Navoi region. The root powder and extract of the (black andise) plant were determined to have antioxidant properties in vitro. The results are presented in Table 1[1-2].

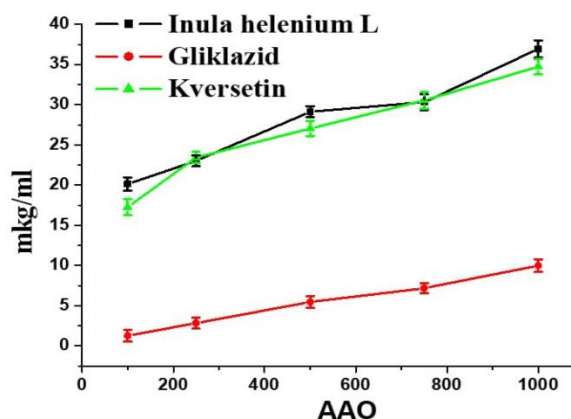
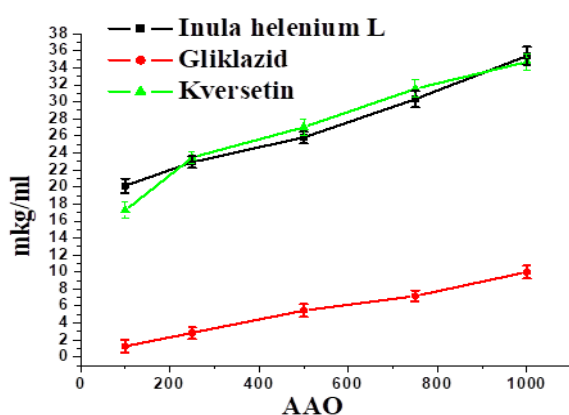
1 table.

***Inula helenium* L. Determination of the antioxidant properties of the root powder and extract of the (black andise) plant in vitro and antioxidant properties and screening tests**

No	Name of drugs	<i>In vitro</i> $\mu\text{g/ml}$ concentration	Control (azid)	The result the riment	A.A. ity %
1.1	<i>Inula helenium</i> L der	100 mg/ml (10%)	0.2214	0.1768	20.14
1.2	<i>Inula helenium</i> L der	250 mg/ml (25%)	0.2452	0.1890	23.01
1.3	<i>Inula helenium</i> L der	500 mg/ml (50%)	0.2226	0.1577	29.15
1.4	<i>Inula helenium</i> L der	750 mg/ml (75%)	0.2523	0.1758	30.32
1.5	<i>Inula helenium</i> L der	1000 mg/ml (100%)	0.2804	0.1720	36.94
2.1	<i>Inula helenium</i> L ct	100 mg/ml (10%)	0.2214	0.1768	20.14
2.2	<i>Inula helenium</i> L ct	250 mg/ml (25%)	0.2452	0.1890	22.92
2.3	<i>Inula helenium</i> L ct	500 mg/ml (50%)	0.2126	0.1577	25.82
2.4	<i>Inula helenium</i> L ct	750 mg/ml (75%)	0.2523	0.1758	30.32
2.5	<i>Inula helenium</i> L ct	1000 mg/ml (100%)	0.2804	0.1811	35.41
B	Kversetin				37,4%

A	Gliklazid			10,0%
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Inula helenium l. (black andise) plant root powder and extract in vitro conditions based on 4 different samples at 5 different concentrations of 100/250/500/750/1000 µg/ml to determine the antioxidant properties and screening tests of antioxidant properties compared with the standard antioxidant quercetin and gliclazide antioxidants indicating the presence of antioxidant properties. Inula helenium l. (black andise) plant root powder has 36.94% activity in (Scheme 1) and 35.41% activity of its extract in (Scheme 2)



<p>Scheme 1. Inula helenium l. Comparing the root powder of the (black andise) plant with (standard) antioxidants quercetin and gliclazide antioxidants shows that the antioxidant properties show activity at 36.94%</p>	<p>Scheme 2. Inula helenium l. Comparing the extract of the root of the (black andise) plant with (standard) antioxidants quercetin and gliclazide antioxidants shows that the antioxidant properties show activity at 35.41%</p>
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Inula helenium l. (black andise) root powder shows activity in 36.94% and extract in 35.41%

CONCLUSION

1. Inula helenium l. The tannins, terpinoids, and flavonoids contained in the powder of the root of the (black andise) plant have antioxidant properties based on the autoxidation reaction of adrenaline (epinephrine) Inula helenium l. plant root powder was prepared based on 4 different samples in 5 different concentrations of 100/250/500/750/1000 µg/ml and the work started with the screening of

substances using epinephrine. *Inula helenium* L. The activity of the extract of the root of the (black anise) plant was 35.41% and the powder was 36.94%.

2. The antioxidant activity of preparations was determined by the method of autoxidation of adrenaline *in vitro*. The antioxidant activity of the researched preparations was evaluated by phytochemical tests.

3. The antioxidant activity of the drugs was determined by the inhibition of the autoxidation reaction of adrenaline *in vitro* and prevented the formation of the free form of oxygen. preparations were compared with the standard antioxidant quercetin and gliclazide antioxidants. It shows that the obtained preparations have antioxidant properties

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