

Раздел 5. «Химия»UDK 633.88
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(e-mail.ru: temir.gulnaz.01@mail.ru)**Development of technology of medicines based on sorb fruits and determination of its antioxidant activity**

Currently, herbal medicines have not lost their relevance in medical practice, as they have a biologically wide spectrum of action. Medicinal preparations obtained from medicinal plant raw materials, in comparison with synthetic preparations, have lower side effects. Therefore, the study of biological biogenic substances in plants with medicinal properties is considered the main direction of modern pharmacy. In the course of plant research, practical interest was aroused by the fruits of mountain ash as a promising medicinal plant, the composition of which is rich in biologically active substances, belonging to the rosaceae group.

Sorb fruits up to 70% vitamin C, as well as fat-soluble vitamins P, A, E, K, PP, 18 types of free amino acids and flavonoids. For this reason, rowan is considered the main representative of antioxidant compounds. The antioxidant activity of mountain ash enhances the properties of regulation and normalization of metabolic processes and carbohydrate metabolism, activation of tissue regeneration, enhancement of hormone synthesis, normal stimulation of secretion of glands of the digestive system, secretion of urine and bile. An extract based on ethyl alcohol can be prepared from mountain ash and the effect can be completely preserved.

Keywords: Sorb, spectrophotometry, voltammetric complex, concentration, antioxidant activity, ethyl alcohol.

Introduction

An important issue is the study of the biologically active substance obtained from Sorb fruits raw materials, taking into account the need for phytopreparations from domestic plant raw materials for the pharmaceutical production of the Republic of Kazakhstan.

Sorb is the main source of biologically active substances. At the same time, if we believe the sources, it contains a large amount of vitamin C. Therefore, studies of the antioxidant activity of the plant and comparisons with ascorbic acid will be carried out.

Thus, the main purpose of the research work in the article is to determine the influence of the degree of grinding of raw materials obtained from Rowan plants, which are medicinal raw materials, in different concentrations on the extraction time and temperature. In the future, the most interesting research area for us is the study of how biologically active substances found in Rowan plants can be used in the prevention and treatment of human diseases.

Experimental part:

In the course of the research work, the studied object was boiled at 40 and 60 degrees for 35 minutes at a concentration of 50% and 70% ethyl alcohol, an extract was obtained and research work was carried out.

Development of a research method. First of all, 10 g of Rowan plants were crushed. The degree of crushing was sifted through a 5mm sieve. Extraction was carried out at concentrations of 50% and 70%, at 40 and 60 degrees for 35 minutes in the presence of a reverse freezer. The resulting extract was placed in a dark place for 72 hours.

As a result, four different extracts were obtained:

1) 40°C, 35 min, C=50%

Раздел 5. «Химия»

- 2) 40°C, 35 min, C=70%
- 3) 60°C, 35 min, C=50%
- 4) 60°C, 35 min, C=70%

At the second stage of the study, work was carried out to determine the concentration of Sorb using a ready-made extract spectrophotometer with ascorbic acid as a reference.

The wavelength is 325nm. The optical length of the cuvette is 10mm. Figure 1 shows the results of the study of sample 2.

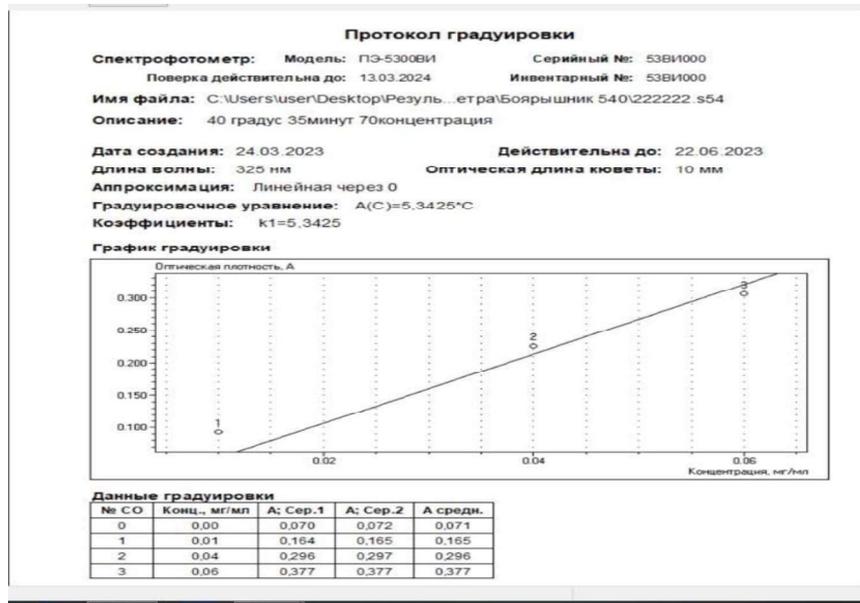


Figure 1. Alcohol extract obtained at 40°C,35 min, C = 70%

The third stage. We determine the antioxidant activity of the Rowan plant, which was studied with the STA voltammetric complex. The antioxidant activity of extracts of ascorbic acid and Hawthorn was obtained in 4 cases, the concentration of which was determined by the voltammetric method. The result of the study of ascorbic acid (Figure 2) turned out to be $K=4.81792$.

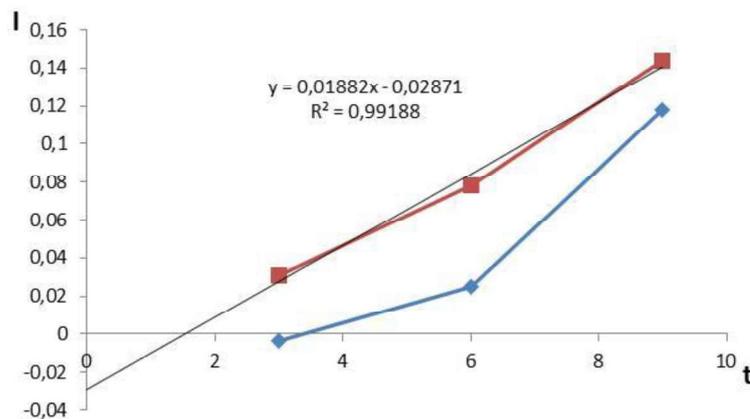


Figure-2. Voltammetric dependence of the antioxidant activity of ascorbic acid

With the help of voltammetry, the antioxidant activity of mountain ash was detected. The results of studies of extracts obtained under four different conditions are presented in Table 1. Sample 2 showed high antioxidant activity (Fig. 3).

Table -1. Sorb fruit sample taken with a voltmeter

Раздел 5. «Химия»

№	Extraction conditions	Coefficient of antioxidant activity (K)
1	40°C; 35 минут; C=50%	114,351
2	40°C; 35 минут; C=70%	121,784
3	60°C; 35 минут; C=50%	83,956
4	60°C; 35 минут; C=70%	116,873

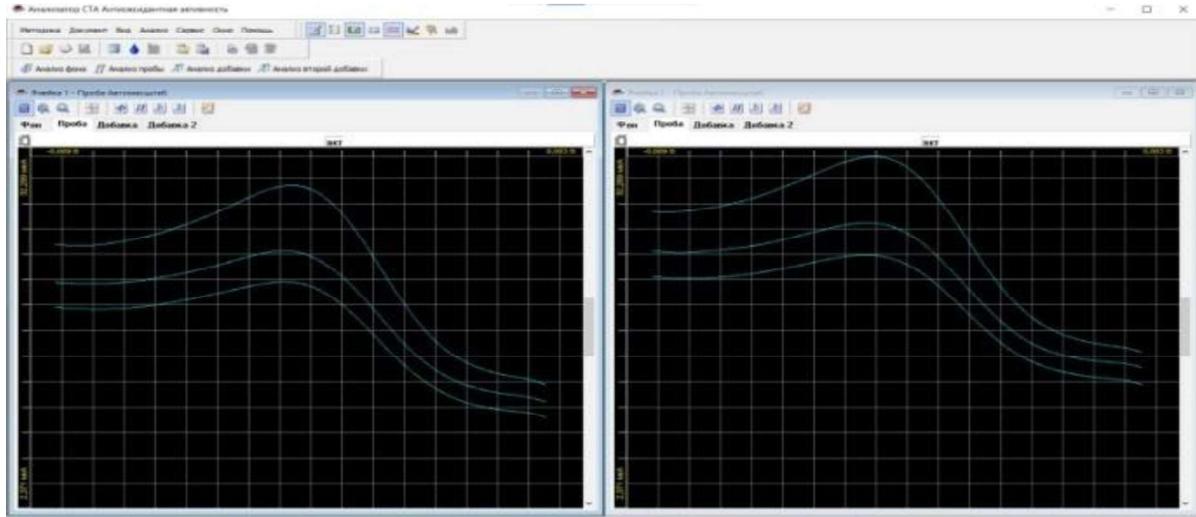


Figure-3 . Voltammogram of sample 2

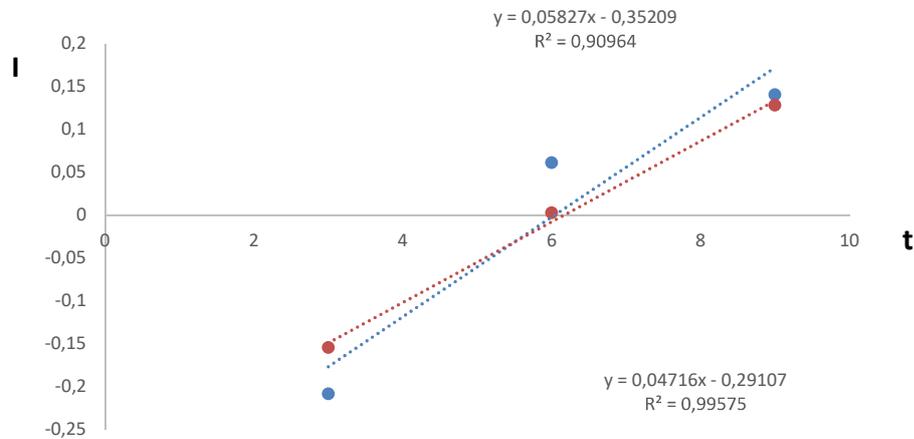


Figure 4. Sample result-2

In the course of the research work, 40°C, 35minutes , 70% extract of rowan fruit detected by the STA Voltammetric device (K=121.784) showed high antioxidant activity compared to ascorbic acid (K=4.81792).

Conclusion

Research work focused on the Rowan medicinal plant consisted of three stages. In the first place, 4 different extracts were obtained by boiling the Rowan plant at 50% and 70% concentrations of ethyl alcohol for 35 minutes at 40 and 60 degrees. The finished extracts were analyzed on a spectrophotometer and a voltmeter.

Раздел 5. «Химия»

As a result of the study, the results of showing antioxidant activity of the extract obtained at a concentration of 70% ethyl alcohol at a temperature of 40 °C showed higher results than the other three extracts.

Following the results of the research, the main plan is to develop a technology for obtaining highly antioxidant active substances identified in the Sorb fruits and study how it can be used in the prevention and treatment of human diseases.

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Шетен өсімдігіне негізделген дәрілік заттардың технологиясын дайындау және оның антиоксиданттық белсенділігін анықтау

Қазіргі таңда өсімдік тектес дәрілік заттар медициналық практикада өз өзектілігін жоғалтпаған, себебі олар биологиялық кең спектрлі әсерге ие. Синтетикалық дәрілермен салыстырғанда дәрілік өсімдік шикізатынан алынатын дәрілік препараттардың жанама әсерлері төмен болып саналады. Сондықтан, емдік қасиеті бар өсімдіктердегі биологиялық белсенді заттарды зерттеу қазіргі фармацевтика саласының негізгі бағыты болып саналады. Өсімдіктерді зерттеу барысында құрамы биологиялық белсенді заттарға бай, раушангүлділер тобына жататын, перспективті дәрілік өсімдік ретінде кәдімгі шетен ағашының жемісі практикалық түрде қызығушылық туғызды.

Шетен –құрамында 70%-ға дейін С дәрумені, сондай-ақ, майда еритін Р,А,Е,К,РР, В дәрумендері мен бос аминқышқылдардың 18 түрі және флавоноидтар кездеседі. Осы себепті шетен өсімдігі антиоксиданттық қосылыстардың негізгі өкілі болып саналады. Шетеннің антиоксиданттық белсенділігі таболикалық процестерді және көмірсулар алмасуын реттеу және қалыпқа келтіру, тіндердің қалпына келуін белсендіру, гормондардың синтезін күшейту, ас қорыту жүйесінің бездерінің секрециясын, несеп пен өт секрециясын қалыпты ынталандыру қасиеттерін арттырады. Шетеннен этил спирті негізінде экстракт дайындап, әсерін толықтай сақтай аламыз.

Түйінді сөздер: дәрілік өсімдіктер, шетен дәрілік шикізаты, концентрация, антиоксиданттық белсенді заттар, спектофотометрия, вольтамперметриялық кешені.

С.К. Кабиева, Г.М. Темир, Ж.Ф. Абилканова, Г.А. Еркинова

Раздел 5. «Химия»

Разработка технологии лекарственных средств на основе растения рябины и определение его антиоксидантной растения

В настоящее время лекарственные средства растительного происхождения не утратили своей актуальности в медицинской практике, так как обладают биологически широким спектром действия. Лекарственные препараты, полученные из лекарственного растительного сырья, по сравнению с синтетическими препаратами, имеют более низкие побочные эффекты. Поэтому изучение биологических активных веществ в растениях, обладающих лечебными свойствами, считается основным направлением современной фармации. В ходе исследований растений практический интерес вызвали плоды рябины обыкновенной как перспективное лекарственное растение, состав которого богат биологически активными веществами, относящиеся к группе розоцветных.

Рябина-содержит до 70% витамина С, а также жирорастворимые витамины Р, А,Е,К,РР,18 видов свободных аминокислот и флавоноидов.По этой причине рябина считается основным представителем антиоксидантных соединений. Антиоксидантная активность рябины усиливает свойства регуляции и нормализации таболических процессов и углеводного обмена, активизации регенерации тканей, усиления синтеза гормонов, нормальной стимуляции секреции желез пищеварительной системы, секреции мочи и желчи. Из рябины можно приготовить экстракт на основе этилового спирта и полностью сохранить эффект.

Ключевые слова: лекарственные растения, лекарственное сырье рябины, концентрация, антиоксидантно-активные вещества, спектофотометрия, вольтамперметрический комплекс.