

**CHEMICAL ANALYSIS OF RETAIL PLANT LEAVES
(HIPPOPHAE RHAMNOIDES wq3L)****F.S.Jalilov, U.A.Yulchiyeva**

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Abstract:An optimal method of studying the chemical composition of the leaves of Hippophae rhamnoides L. and extracting polysaccharides and polyphenols from its fruit were found. Using ThLCh and PCh methods, it was determined that the leaves of Hippophae rhamnoides L. contain Gallic acid, quercetin, kaempferol, kaempferol-3-glucoside in the presence of witnesses.

Key words:ThLCh and PCh flavonoid, extraction, alkaloids, retail oil, tocopherol, phospholipids, Hippophae rhamnoides L.

Today, the interest in medicinal plants is increasing, due to the global pandemic, people pay special attention to health, increase awareness of health secrets, elderly and chronically ill people prefer natural means to activate immune system, natural absolute harmlessness and usefulness of the means caused a sharp increase in the volume of scientific research in this field and the demand for medicinal plants in international markets. Uzbekistan is a region of natural and geographically rich medicinal plants, more than 4,300 types of plants belonging to the local flora are 750 species, of which 112 species are registered for use in scientific medicine, of which 70 species are pharmaceuticals actively used in industry[1-4]. In recent years, consistent reforms have been implemented in our republic regarding the protection of medicinal plants, the rational use of natural resources, the establishment of plantations where medicinal plants are grown and their processing. In particular, great importance is attached to the development of medicinal and spice plants, in particular to the effective and productive use of natural resources[5-9]. Decree of the President of the Republic of Uzbekistan dated April 10, 2020, No. PQ-4670 The decision created the legal basis for the radical development of the industry. As a result of the implementation of the tasks of this decision, the number of farmers and entrepreneurs who are engaged in not only collecting medicinal plants in the wild, but also cultivating them in the plantation method and organizing their processing is increasing significantly. At the same time, analyzes show the need to protect medicinal plants, establish their plantations, and create an additional value chain through processing.

Today, as a result of increased attention to the industry and rational use of available opportunities, more than 100 species of medicinal plants are allowed to be used in the official medicine of the Republic, and the bulk of these medicinal plants are plants growing in natural conditions. One of the such plants are the plant of Hippophae rhamnoides L., which is considered a valuable raw material for food, pharmaceutical and perfume industries. The main reason for including Hippophae rhamnoides plant among medicinal plants is that its fruit contains carotene, in the presence of fat, flavonoids, sugar, protein and other substances. Hippophae rhamnoides oil is a drug that activates tissue metabolism and stimulates the regeneration process. Stimulates reparative processes in skin and mucous membrane injuries of various etiologies (wounds, radiation, burns). It has a general strengthening effect, has antioxidant and cytoprotective activity. Protects cell and subcellular membranes from damage. The pharmacological effect is due to the presence of carotene (provitamin A), tocopherol (vitamin E) and other lipophilic substances in the drug. Hippophae rhamnoides leaves are also rich in various biologically active substances, based on which preparations with a wide range of

effects have been created. Taking into account the above, the study and analysis of the chemical composition of the leaves of *Hippophae rhamnoides* L. plant growing in our Republic is one of the urgent topics.

The healing properties of *Hippophae rhamnoides* fruit have been known since ancient times. Currently, more than a hundred varieties are cultivated, and the fruits of the plant are widely used in the pharmaceutical industry. In recent decades, retailing has attracted the attention of many scholars around the world. E.I. Panteleeva, A.Ya. Zemtsova, N.A. Khovalig, G.A. The scientific works and works of such famous scientists as Berezhnaya (Russia), Thomas Lee (Canada), Virendra Singh (India), Koki Kanahama (Japan) are devoted to the study of the *Hippophae rhamnoides* plant. *Hippophae rhamnoides* fruits are a natural concentrate of carotenes, tocopherols, phyloquinones, sterols, phospholipids and other biologically active substances. The fruits of this plant are used to treat heart diseases, stomach ulcers, brain diseases and cancer. 5-Hydroxytryptamine isolated from *Hippophae rhamnoides* bark can inhibit the growth of tumor cells. The complex of biologically active substances contained in *Hippophae rhamnoides* has an antiaggregatory, hypotensive, cardioprotective effect on the cardiovascular system. It also affects the flexibility of the cardiovascular system, increases the endurance of the heart muscles, and improves myocardial contractility. *Hippophae rhamnoides* seeds have been proven to have an anti-atherogenic effect; its oil prevents myocardial damage during ischemia. Phytosterols in the oil can reduce blood cholesterol levels when consumed. Vitamin P contained in the fruit helps increase the strength and elasticity of capillary vessels, as a result of which the capillary is not damaged by a sharp increase in blood pressure. Additives and polyphenols contained in its leaves show activity against various viruses and are used in scientific medicine as an antiviral drug.

As a result of research carried out in recent years, it has been shown that the leaves of the *Hippophae rhamnoides* plant are also rich in biologically active substances, especially polyphenolic compounds. The chemical composition of the leaves of the *Hippophae rhamnoides* L. plant was studied, it was determined that the raw material of the plant is rich in biologically active substances, and the prospects of its use in medicine were shown.

In order to find an optimal method of extracting polyphenols from *Hippophae rhamnoides* L., factors such as dependence on the extraction module, extraction frequency, solvent concentration, extraction temperature, and the degree of grinding of the plant were studied. From the obtained results, it became clear that the most optimal method for extracting the sum of polyphenols from these plants was shown as follows: the degree of grinding of plant raw materials is 5-7 mm, the extraction temperature is 450C, for 2 hours, 1 By extracting in a ratio of 6:70% in acetone, 3 times in repetition, a sum of polyphenols with high yield and quality was isolated.

In order to study the content of polyphenols in *Hippophae rhamnoides* L., dried leaves of the plant collected at the end of the growing season were used. 1000 g of plant raw materials were taken and extracted from lipophilic compounds in chloroform (5-7 mm grinding level), (1:6 ratio, v/v) at 450C, for 2 hours, in a water bath with a reflux cooler, and repeated 3 times. . The extracts were filtered and the raw materials were dried at room temperature until free of chloroform (48 hours). Then the raw material was extracted in 70% aqueous acetone (1:6 ratio, v/v), at a temperature of 450C, for 2 hours, with 3 repetitions. Extracts were filtered and the aqueous fraction was separated by driving off acetone under vacuum at 35-40C. The aqueous fraction was extracted with ethyl acetate (1:4, v/v) to obtain the ethyl acetate fraction. This fraction was dried over anhydrous Na₂SO₄, filtered, and extracted with a rotary evaporator to give a concentrate with ethyl acetate. By precipitating the concentrate with chloroform in a ratio of 1:4, a sum of polyphenols in the amount of 3.8% of the dry mass of the plant was isolated (Scheme 1). The sum of polyphenols was tested by thin-layer chromatography (UQX) and paper

chromatography (QX, systems 1, 2, 1,2-openers), with the help of quality reactions, with the presence of witnesses, and the presence of compounds belonging to the 5 classes of phenolic substances. was determined.

Summary. Hippophae rhamnoides is the leader among plants in terms of chemical composition. All its parts (fruits, leaves, barks, branches) contain different groups of biologically active substances. Russian scientists conducted a comparative biochemical analysis of some varieties of Hippophae rhamnoides is thin layer chromatography ThLCh, HRICH, PCh as well as photolorimetric and titrimetric methods were used to determine different groups of biologically active substances in Hippophae rhamnoides fruits. The composition of separate groups of biologically active substances in Hippophae rhamnoides leaves, bark, and buds, and their accumulation characteristics were studied.

Radiological and elemental analysis of Hippophae rhamnoides fruits showed that they do not accumulate radionuclides and toxic elements. At the same time, it was noted that anthropogenic influence affects the content of various toxic pollutants in retail fruits.

References:

1. Khaidarov H.K. Elaeagnaceae in the flora of Uzbekistan Juss. family. //Autoref. boiled science. doc. - Tashkent. 2018. - 62 p.
2. Болтаев, М. М., кизи Мелибоева, Ш. Ш., Джалилов, Ф. С., & Самадов, Б. Ш. (2023). BROKKOLI O'TINI QURITISH TEXNOLOGIYASI (BRASSICA OLERACEA L.). Журнал химии товаров и народной медицины, 2(2), 182-196.
3. Boltaev, M. M., Sh, M. S., & Jalilov, F. S. (2023). PREPARATION AND DRYING OF BROCCOLI HERBS (BRASSICA OLERACEA L.). Електронне видання мережне Редакційна колегія: проф. Котвіцька АА, проф. Владимірова ІМ, проф. Георгіянц ВА, проф. Перехода ЛО, проф. Журавель ІО, проф. Колісник СВ, доц. Криськів ОС, проф. Власов СВ, ас. Смєлова НМ, ас. Григорів ГВ, 19.
4. Самадов, Б. Ш., Жалилова, Ф. С., & Жалилов, Ф. С. (2021). Химический состав плоды "Momordica Charantia L" выращенного в условиях Бухарской области республики Узбекистан. Матеріали ІХ Міжнародної науково-практичної internet-конференції «Сучасні досягнення фармацевтичної технології». Харків, НФаУ. Редакційна колегія, 3-7.
5. Самадов, Б. Ш., Джалилов, Ф. С., Юлдашева, Д. Х., Джалилова, Ф. С., Болтаев, М. М., & кизи Мелибоева, Ш. Ш. (2022). ПРИМЕНЕНИЕ В НАРОДНЫЕ МЕДИЦИНЫ ПЛОДЫ ЛЕКАРСТВЕННОГО РАСТЕНИЯ MOMORDICA CHARANTIA L. Журнал химии товаров и народной медицины, 1(4), 117-133.
6. Samadov, B. S., Jalilov, F. S., & Jalilova, F. S. (2022). DOSAGE FORMS BASED ON THE MEDICINAL PLANT MOMORDICA CHARANTIA L. Medical Scientific Bulletin of Central Chernozemye (Naučno-medicinskij vestnik Central'nogo Černozem'â), (90), 10-18.
7. Болтаев, М. М., кизи Мелибоева, Ш. Ш., Джалилов, Ф. С., Юлдашева, Д. Х., Джалилова, Ф. С., & Самадов, Б. Ш. (2022). BROKKOLI VA BROKKOLI NIHOLLARIDAN TURLI KASALLIKLARNING OLDINI OLIISH VA DAVOLASHDA FOYDALANISH. Журнал химии товаров и народной медицины, 1(4), 242-254.
8. Egamberdiyevna, E. R. E., & Sodiqovich, J. F. (2024). The Use of Natural Mineral Salts" Dengizkul"(Bukhara) in Psoriasis. American Journal of Pediatric Medicine and Health Sciences (2993-2149), 2(1), 260-262.

9. Самадов, Б. Ш., Джалилов, Ф. С., Юлдашева, Д. Х., Джалилова, Ф. С., Болтаев, М. М., & кизи Мелибоева, Ш. Ш. (2022). XALQ TABOBATIDA ISHLATILADIGAN MOMORDICA CHARANTIA L DORIVOR O'SIMLIGINING KIMYOVIY TARKIBI. Журнал химии товаров и народной медицины, 1(4), 134-161.
10. Kakhramonovna, P. D., Isroiljonovich, M. A., Faridovna, U. F., & Ogli, M. S. B. (2023). STUDY OF FREE AMINO ACIDS AND ELEMENTAL COMPOSITION OF COMMON BARLEY GRAINS AND ITS DRY EXTRACT. Химия растительного сырья, (1), 233-238.
11. Акопов I.E. Vajneyshie otechestvennyye lekarstvennyye rasteniya i ix primenenie. - Tashkent: Medicine, 1990. - 446 p.
12. Oblepikha. Botanichesky portrait, posadka i ukhod. // Sadovnik: journal. – No. 10. 2006.S. 2-4.
13. Rastitelnye lekarstvennyye sredstva Abu Ali ibn Sina (Avitseny). Spravochnik // Pod redaktsiey Sh.B.Irgasheva. - Tashkent: Abu Ali ibn Sina, 2003. - 457 p.
14. Lee T.S.C. Chapter 8. Diseases, Insects, Pest and Weed Control //Sea buckthorn (Hippophae rhamnoides L.): production and utilization. - 2003. - S. 47-50.
15. Gosudarstvennyy reestr lekarstvennyx sredstv. Ofitsialnoe izdanie: v 2 t.- M.: Meditsinsky sovet, 2009. - T.2, ch.1. - 568 p.; Ch. 2. - 560 p
16. Khojimatov K.Kh., Khojimatov O.K., Sobirov U.A. Sbornik pravil polzovaniya obektami lekarstvennyx, pishchevyx i tekhnicheskix rasteniy. Tashkent: "Yangi asr avlodi", 2009. - 171 p.
17. Gould, K. S., Lister, C. (2006), Flavonoid functions in plants, in Andesen, O. M., Markham, K. R. Flavonoids. Chemistry, biochemistry and applications, Boca Raton, 8, 397–441.