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PROSPECTIVE CHARACTERISTICS OF THE SPECIES INCLUDED IN THE GENUS RHEUM

Abstract

The article is based on literature data and research results. The methods used in the treatment of diseases are sometimes insufficient. Referring to these reasons, the role of natural herbs in the treatment of diseases becomes an undeniable fact. Among these plants, it is impossible not to find species of the genus Rheum. Plants have long been used to treat diseases. It continues to be a major source of new drugs. About two-thirds of anti-inflammatory drugs come from plants.

Keywords: *flower, leaf, currant, flavonoid, antioxidant*

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Rheum cinsinə daxil olan növlərin perspektiv xüsusiyyətləri

Xülasə

Məqalə ədəbiyyat məlumatlarına və tədqiqat nəticələrinə əsaslanır. Xəstəliklərin müalicəsi zamanı istifadə olunan metodları bəzən yetərsiz qalır.Bu səbəblərə istinadən xəstəliklərin müalicəsi zamanı təbii otların rolu danılmaz fakta çevrilir. Bu bitkilər arasında Rheum cinsinin növlərinə rast gəlməmək mümkünsüzdür. Bitkilər uzun müddət xəstəlikləri müalicə etmək üçün istifadə olunur. Yeni dərmanların əsas mənbəyi olmağa davam edir. İltihab əleyhinə dərmanların təxminən üçdə ikisi bitkilərdən gəlir.

Açar sözlər: *çiçək, yarpaq, qarağat, flavonoid, antioksidant*

Introduction

Reum is a genus of about 60 perennial herbaceous plants in the family *Polygonaceae*. This species is native to eastern Europe, southern and eastern temperate Asia, with some reaching northern tropical Asia. Rheum is cultivated in Europe and North America. The genus includes vegetable rhubarb. This species has large, slightly triangular leaves with long, fleshy petals. The flowers are small, from greenish-white to pinkish-red, collected in large complex leafy inflorescences. Several varieties of rhubarb have been domesticated both as medicinal plants and for human consumption. Although the leaves are somewhat poisonous, the twigs are used in pies and other products to flavor cakes. Reum species are perennial herbs growing from fleshy roots.There are about 200 species of fish. Selected species include:

They have upright growing stems and basal leaves that grow mainly from short, thick rhizomes. They have persistent or deciduous ocher. The flowers are apical, paniculate, with pedicels. The hermaphrodite flowers are whitish-green to pink-green, glabrous, and consist of a cup-shaped (bell-shaped) perianth consisting of six tepals. The three outer tepals are narrower than the three inner ones, and all of them are similar in appearance to sepals. The flowers have nine (sometimes six) stamina inserted into a torus at the base of the perentium, which are free or fused at the base. The

anthers are yellow or pinkish-green, elliptical in shape. The ovary has a simple triangular shape and is of three erect or recumbent types. Stigmas are like heads. The fruits are triangular achenes with winged sides, protein seeds with a straight or curved embryo.

The growing consumer interest in Ribes nigrum L. is mainly due to the variety of bioactive compounds with potential health benefits, such as high levels of ascorbic acid (vitamin C), antioxidants and fatty acids (Tabart, Kevers, Evers, Dommes, 2011: 4763-4770). Bioactive compounds are found not only in fruits, but also in leaves and buds. This requires a constant balance between berry production and vegetative growth. To obtain a high and high-quality harvest, new industries are needed, but vegetative growth and crop formation compete for the same resources. The main goal of growing black currant is to obtain a high yield early and late (Mitić, Obradović, Kostić, Nasković, Micić, 2011: 611-619). Knowledge of the need and level of consumption of various nutrients depending on the periods of phenophases influences the fertilizer system optimized for the quantity and quality of the crop. Each nutrient must be available at the right time for maximum plant uptake from budding to maturity and harvest. Some studies have noted that blackcurrant did not respond to increased amounts of mineral fertilizer (NPK) when the soil was previously rich in organic matter. The formation of flower buds in black currants occurs in the autumn of the previous year under short-day conditions. Since flowering and fruiting in black currant occur on young, vigorous shoots, productivity is clearly related to the increase in the number of shoots in the previous season. As a perennial crop, the indirect yield potential of currants is determined a year in advance, and the direct potential depends on agroclimatic conditions during the period of fruit development. (Reckrühm, Bachmann, Wünsche, 1990: 37-46).

A major environmental concern in agricultural strategies worldwide is the increase in pollution caused by the use of chemical fertilizers. Strategies to improve nutrient uptake, yield and economic efficiency are imperative for sustainable agriculture. In this context, the application of foliar fertilizers or biostimulants is usually considered only to target the plant and reduce environmental pollution in terms of nitrate leaching (Mataffo, Scognamiglio, Dente, Strollo, Colla, Rouphael, Basile, 2020: 619).

Additionally, foliar crop nutrition is considered versatile because it provides nutrients that are immediately available for planting when early signs of deficiency are detected .A close relationship has been found between leaf value and nutrient content. Based on this and other studies, it is possible to improve the use of foliar fertilizers in intensive and sustainable technologies for growing black currants. Yield forecasting is complex, and in addition to macroelements, foliar microelements are also important (Wojcik, 2005: 63-72), optimal temperature and access to water. Fertilizing this crop is quite complex and difficult, so it is important to learn the types of fertilizers. We tried to cover as many aspects of fertilization as possible when growing blackcurrants. For this reason, the entire blackcurrant experience was presented in two different scientific papers (Dong, Neilsen, Neilsen, Fuchigami, 2005: 357-366).

The purpose of this experiment was to evaluate the specific effects of three foliar formulations on the growth and yield of branches of three currant species. The hypotheses tested were: (i) Is there a difference in the specific response of each variety to foliar fertilization? (ii) Are there any advantages to specific foliar fertilizers? (iii) Do growth models for each variety use the same growth parameters or are there differences in the choice of biometric parameters? In addition, crop economic efficiency was calculated based on the yield observed in each treatment.

Research on polyphenols and ANC is well documented; however, there are still many unknown factors associated with health benefits. ANC accounts for 90 of the total polyphenols in BC, and 73% of the consumed ANC can reach the colon and be degraded by microbes. One promising finding regarding ANCs from British Columbia is their ability to inhibit the adhesion of Salmonella enterica serovar Typhimurium to Caco-2 cells, 39% which may be useful for the food industry. The same study confirmed a strong dose-dependent correlation with D3G and C3R from BC juice and its ability to inhibit the adhesion of Salmonella enterica serovar Typhimurium to Caco-2 cells. In

addition to their antimicrobial properties, PAC-rich BC and BCE juices have been shown to be beneficial for asthma and respiratory problems.

Mechanism. A decrease in the levels of Th2 cytokines, cytokines, cyclooxygenase and modulation of CCL 1 and CCL secretion characterized the effect of ultrasound irradiation on the bioactivity of BC polysaccharides. In this process, the characteristics of three different BC polysaccharide solutions were evaluated for the effects of ultrasonication and its effects on antioxidant activity, free radical scavenging activity, lipid peroxidation prevention, DNA damage protection, α-amylase, and α-inhibition. Glucosidase activity. It was concluded that higher sonication power results in higher reducing sugar content with improved thermal stability. Although an increase in reducing sugars was observed, six types of monosaccharides (galacturonic acid, galactose, mannose, glucose, arabinose, and rhamnose) were detected in the treated sample. The same six monosaccharides were also found in the control, indicating that ultrasonication did not cause any significant structural changes. However, the study concluded that ultrasound irradiation improved the antioxidant capacity and percent inhibition of both α-amylase and α-glucosidase, possibly due to polysaccharide degradation. The fragmented polysaccharide sample U-600 W (M w = 1.32 × 10 4 kDa) treated with ultrasound showed better results for all analyzes compared to the polysaccharide treated with lower power (Matsumoto, Nakamura,Iida, Ito, Ohguro, 2006: 348-356).

Both animal and human studies have shown the effects of BC and BCE on athletic training and performance. BC and BCE have been shown to reduce oxidative stress-related injuries that lead to fatigue and injury. It is also well known that flavonoids protect retinal cell types from death due to oxidative stress. This phenomenon can probably be explained by the fact that the retina has the highest metabolic rate of all body tissues that are susceptible to oxidative stress.

After intraperitoneal administration, the ANC concentration in the whole eye reached 4.99 ± 0.48 μg/g after 30 min, which was the maximum value. The concentration of ANC in the whole eye was two times higher than in plasma, and the majority of ANC was found in the sclera and choroid. The results of intravenous administration showed that significantly lower concentrations of ANC were found in the sclera and choroid, and higher concentrations were found in plasma. The concentration of ANC in rabbit ocular tissues was determined and ranked as follows: sclera > choroid > cilia > body > aqueous humor > iris > cornea > retina > vitreous > lens, indicating the affinity between ANC and collagen fibers. This study confirmed that ANC containing BC water (from powder) can cross both the blood-retinal and blood-aqueous barriers in both rats and rabbits. These results are promising as they indicate that BC and BCE have potential as therapeutic agents for the treatment of ophthalmic diseases.

The results of this study showed that TIG113 cells exposed to BCE had similar effects to TIG113 cells exposed to estradiol. Results from a study in OVX rats showed that collagen thickness was significantly greater in 3 %BCE rats (1156 ± 36 μm) and sham-treated rats (845 ± 36 μm). Thus, BC, especially the four major compounds (D3G, D3R, C3G and C3R) in BC, were found to have skin-beneficial phytoestrogens effects. A separate study was conducted to evaluate the effect on protein expression. This study showed that BCE increases the number of low-density lipoprotein receptors without any changes in cellular mRNA. Overall, the evidence suggests that BCE increases cholesterol transport across enterocytes, suggesting that BCE plays a role in the cholesterol-lowering effects.

The exact mechanism of action was not identified in this study, meaning that in vivo studies are needed to characterize the mechanisms. In addition to its positive effect on cholesterol levels, BA has been reported to lower blood glucose levels and improve glucose tolerance in both mice and rats, and to reduce postprandial blood glucose concentrations in humans. A recent study found that dietary forms of BCE that contain delphinidin-3-rutinoside (D3R) in high concentrations can significantly reduce blood glucose levels and improve glucose tolerance in mice with type 2 diabetes. The mechanical changes that caused these effects were associated with increased secretion of glucagon-like peptide-1 (GLP-1) in plasma. It is also associated with increased expression of intestinal prohormone convertase 1/3 (PC1/3) and activation of adenosine monophosphate-activated protein kinase-mediated translocation of the insulin-regulated glucose transporter (Glut4) in type 2

skeletal muscle. Black currant extract reduces hyperglycemia in mice with type 2 diabetes by increasing basal secretion of glucagon-like peptide-1 and activation of AMP-activated protein kinase (Park, Kho, Kim, Ahn, Lee, Kang, Lee, 2015: 201).

Significant reductions in mean arterial pressure and total peripheral resistance were observed in 15 male endurance cyclists who received BCE supplements of 600 and 900 mg daily during 2 hours of continuous exercise. In a separate study, mean fat oxidation levels in endurance-trained women increased by 27% during 120 minutes of moderate-intensity cycling when taking 600 mg of BCE per day compared to placebo. Timing of administration and concentration of ANC from BC were important for maximizing the health benefits associated with regular exercise. Drinking 16 ounces of BCN Nectar (BCN) twice daily for eight consecutive days 48 hours after exercise was also found to increase blood oxygen radical absorbance capacity (ORAC) compared to placebo (BCN = 2.68 vs. PLA = -). 6.02% P = 0.039%).Consuming BCN before and after eccentric exercise has been shown to reduce muscle damage and inflammation. The New Zealand BCE Study (CurraNZ) tested lactate response during and after high-intensity interval running. They found that CurraNZ can improve performance in sports characterized by high-intensity interval training, as longer distances are covered in repeated sprints. There are human studies that provide evidence of improved cognitive function, modulation of blood flow, regulation of blood glucose levels, and inhibition of enzymes associated with normal cognitive function after BC consumption (Watson, Haskell-Ramsay, Kennedy, Cooney, Trower, Scheepens, 2015: 524-539). Blackfoot people used currant root (Ribes hudsonianum) to treat kidney disease, menstrual problems and menopause. The Cree used the fruit of the ferruginous ribes as a means of promoting the conception of women. European settlers in North America in the 18th century commonly made wine from both red and white currants.

Ribes alpinum. Ribes alpinum, also known as mountain currant or alpine currant, is a small-leaved dioecious shrub native to central and northern Europe from Finland and Norway south to the Alps and Pyrenees and from the Caucasus to Georgia; limited to highlands in the south of the range. It is rare in Western Europe, and in England it is limited to a small number of sites in Northern England and Wales. R. alpinum grows to 2 meters (6 1/2 ft) tall and 1.5 m (5 ft) wide, with an erect and dense habit. The bark is smooth and light gray at first, then becomes brownish-gray and finally peels off. The buds are scattered, compressed, light green to white. The leaves are palmate. The upper side of the leaves is dark green, the lower side is light green. Male and female flowers have different patterns. Both types of flowers are born in clusters at the corners of the leaves, where the stamens are longest. Individual flowers are small, greenish-yellow. The fruit is red, transparent, similar to red currants, but has an unpleasant taste. The seeds germinate easily.

Ribes aureum. Ribes aureum, known by the common names golden currant, clove currant, corn currant, and buffalo currant, is a species of flowering plant in the genus Ribes, native to North America. The plant is a small to medium sized deciduous shrub, 2–3 meters (6 1⁄2–10 ft) tall. . The leaves are green, semi-leathery, 3- or 5-lobed, turning red in autumn. The plant blooms in spring with showy clusters of golden-yellow flowers, often with a sharp, spicy aroma similar to cloves or vanilla. Flowers can also have shades from cream to red and are collected in inflorescences of up to 15 pieces. When young, the bush bears berries about 1 centimeter (3⁄8 in) in diameter. Ripe fruits range in color from yellow to black. Variety Willosum black-the fruits can be eaten raw, but they are very sour or bitter. They are usually cooked with sugar and can be made into jelly. The flowers are also edible. The berries were used by various Native American groups in North America for food and other plant parts for medicine. Ribes cereum is a variety of currant known by the common names wax currant and squaw currant; The pedicel variety is known as whiskey currant. This species is native to western North America. The berries were eaten by some Native American tribes. The Zuni eat the berries of the pedicella species, as well as the leaves with raw lamb or venison fat. The field guide reports that the berries are slightly poisonous and may have an unpleasant taste. If you eat too much, you may experience a burning sensation in your throat. One source says they are best when ripe and can be used to make jams or pie fillings.

Ribes divaricatum is a species of the genus Ribes found in forests, woodlands, and coastal scrublands of western North America from British Columbia to California. The three accepted varieties have different common names, including the word "motusturumu". Other common names include coastal black corn, wild corn, Worcesterberry, or spreading branch corn. Ribes ferruginata is a deciduous shrub, growing up to 0.5 m (2 ft) tall and wide. It has palmately lobed leaves with 5 or 7 deeply dissected segments. The flowers are elongated inflorescences of 6-15 pink flowers. The fruits are red, egg-shaped, sometimes tasty, sometimes not. It is considered a noxious weed in Michigan and its cultivation is prohibited in some parts of the state. A complex decoction of Ojibwa root is taken for back pain and “female weakness.” Woods Cree use a decoction of the stem either alone or mixed with wild red raspberries to prevent blood clots after childbirth, eat the berries as food, and use the stem to make a bitter tea. The Algonquins use the berries as food. Ribes sanguineum, flowering currant, red-flowered currant, red-flowered currant, or red currant, is a species of flowering plant in North America, Grossulariaceae, native to the western United States and Canada. It is a deciduous shrub growing to a height of 3 meters (10 ft). It is naturally multi-trunked, with an erect arching to a rounded crown, although it can be grown as a tree. The bark is dark brown-gray with light brown lentils, the leaves are alternate, simple, 2–7 cm (1–3 in) long, broad, palmately five-lobed. When young in the spring, it has a strong resinous odor. Flowers appear in early spring, at the same time as the leaves appear, in drooping racemes of 5–30 flowers 3–7 cm (1–3 in) long; each flower is 5–10 millimeters (1⁄4–3⁄8 in) in diameter, with five red or pink petals. The fruit is a dark purple oval berry, about 1 cm (3⁄8 in) long, edible but tasteless. Both indigenous and newcomers eat berries, eat them fresh or dried, and prepare jams, pies, juices and syrups. The flowers can be used to prepare drinks, especially alcoholic ones. Cooking the tart taste of red currant fruits when ripe is somewhat stronger than that of currants, but with the same approximate sweetness. The white-fruited version of red currants, often called white currants, have the same tart flavor but with more sweetness. Like white currants, they are often grown for jams and stews, but when in season they are served raw or as a simple addition to salads, side dishes or drinks. In the United Kingdom, red currant jelly is often used on holiday or Sunday roasts with lamb, game, turkey and seasoning served with gas. It is essentially jam and is prepared in the same way: red currants are added to sugar, boiled and strained. Very rare and handcrafted in France, Bar-le-Duc or "Jelly of Lorraine" is a paste-like preparation traditionally made from white currants or, alternatively, red currants. The seeds are collected by hand by monks using goose feathers before cooking (Berries, 2018: 86). In Scandinavia and Schleswig-Holstein it is often used in fruit soups and summer puddings (rødgrød, rote grütze or ride grütt). In Germany it is also used with cream or meringue as a filling for cakes, and in Linz, Austria it is the most commonly used filling for Linzer cake (Haywood, Walker: 207).

It can be consumed fresh, without added sugar. In German-speaking regions, the syrup or nectar obtained from red currants is added to sparkling water and used as a refreshing drink called "Johannisbierschorle". The red currant (Johannisbeeren, German for "John's Berry") is said to first ripen on June 24, Midsummer, also known as Midsummer. In Russia, red currants are ubiquitous and are used in jams, preserves, compotes and desserts. Kissel is also prepared from it - a sweet, healthy drink made from fresh berries or fruits (for example, red currants, cherries, cranberries). In traditional medicine, the leaves have many uses, such as making black tea infusion. Plants were also grown in Russian monastery gardens in the 11th century (Thomas, 1842: 135).

Ribes triste. Ribes triste in the kitchen, Alaska Natives use fruit as food, eating it raw and making jams and jellies from the berries. The Eskimos eat the berries, and the Iñupiat eat them raw or cooked, mixed with other berries used to make a traditional dessert. The berries are also mixed with rose hips and highbush cranberries to make a syrup. The Iroquois grind the fruits into small cakes and store them for future use. They then soaked the muffins in warm water and made a sauce for them or mixed them with cornbread. They also dry raw or cooked fruits in the sun or fire for future use and carry dried fruits with them as hunting food. The Ojibwe eat the berries raw and also cook them, spread them on birch bark and make small cakes, which are dried and stored for the

winter. In winter, berries cooked with corn are often eaten. The berries are also used to make jams and preserves. The Upper Tanana eat the berries as food.

In Ojibwe medicine, a decoction of the root and stem is taken for "gravel," and a complex decoction of the stem is taken to "stop menstruation," and the leaves are used as "women's medicine". Upper Tanana uses a decoction of the barkless stem for eye pain (Kari, 1985: 11).

Conclusion

The preparation, purchase and application of plant extract during treatment promotes the development of medicine. And thus, it is planned to carry out more extensive studies on these methods in the coming years.

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