

Рис. 3. Профілограма запаху зразків сухих сніданків:
1 – виражений; 2 – зерновий; 3 – пряний; 4 – м'ясний;
5 – слабовиражений; 6 – сторонній

і відповідно на вибір товару споживачем, є смак. Під час дослідження смаку методом профілювання враховувалися такі дескриптори:

- позитивні – загальне враження, гармонійний, зерновий, пряний, м'ясний, солоний;
- негативні – прісний, прогірклий, неприємний післясмак.

Профілограма смаку контрольного і дослідних зразків наведена на рис. 1.

Як видно з профілограми, розроблені екструдовані зернові продукти з включенням м'ясних компонентів та інших добавок характеризувалися гармонійним смаком, приємним м'ясним, пряним і злегка зерновим присмаком, на відміну від контрольного зразку, який мав недостатньо гармонійний смак із явно вираженим зерновим присмаком.

Для оцінки зразків екструдованих зернових продуктів за кольором, запахом і структурою були побудовані профілограми, які наведені на рис. 2-4.

Результати свідчать, що зразки продуктів збагачені м'ясними компонентами та іншими добавками

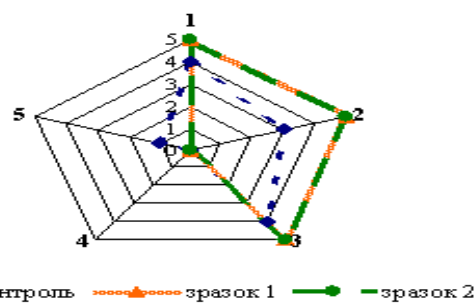


Рис. 4. Профілограма структури зразків сухих сніданків:
1 – пориста; 2 – ніжна; 3 – хрустка; 4 – не хрустка;
5 – груба

мають привабливий, приємний колір, виражений зерновий, пряний і м'ясний запах, пористу, хрустку структуру. Необхідно відмітити, що введення збагачувальних добавок до складу екструдованих зернових продуктів сприяє тому, що структура дослідних зразків стає більш ніжною.

Таким чином, на наше припущення щодо введення м'ясних компонентів, суміші прянощів та кухонної солі до складу екструдованих продуктів для покращення органолептичних показників готових виробів підтверджують результати сенсорного аналізу. Дані вироби характеризувалися гармонійним смаком, приємним м'ясним, пряним і злегка зерновим присмаком, мали приємний колір, виражений зерновий, пряний і м'ясний запах, пористу, хрустку, ніжну структуру. За результатами дегустаційної оцінки зразки, збагачені м'ясними компонентами та іншими добавками, отримали найбільшу кількість балів, що відповідає категорії якості «відмінно».

Поступила 05.2012

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УДК 634.7: 631.527.5

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CORNELIAN CHERRY (DOGWOOD) IN SOUTH OF UKRAINE

In August, 2011 an expedition has been organized by ONAFT to Crimea in the framework of the FP7 BaSeFood project aiming to collect and document information and study some of the most important Crimean traditional fruits and berries. Several private households have been visited growing traditional Crimean fruits and berries and collecting wild species in forests and mountains and additional information was obtained from about 20 local people. One of the most interesting species was Cornelian cherry described in this paper.

Keywords: Cornelian cherry, dogwood, cornel.

В августе 2011 года была организована экспедиция ОНАПТ в Крым в рамках проекта FP7 BaSeFood, с целью сбора и документирования информации и изучения некоторых наиболее важных крымских традиционных фруктов и ягод. Несколько частных домохозяйств были посещены, где выращиваются традиционные фрукты и ягоды и собираются дикорастущие виды в лесах и горах. Дополнительная информация была получена от порядка 20 местных

жителей. Одним из наиболее интересных видов ягод был кизил, описанный в данной статье.

Ключевые слова: кизил, дикорастущие ягоды.

Introduction

Cornelian cherry (dogwood) *Cornus mas l.* is one of the most valuable fruit plants in the *Cornaceae Dumort* cornel family. It is a very ancient cultural plant in Ukraine known from the times of Kievan Rus. It is cultivated in many European countries, but there are no special plantations. In nature Cornelian cherry grows in a narrow band in Pridnestrovye from the western boundary of the Ivano-Frankivsk region to the north of Odessa, in the eastern part - in some districts of Cherkasy region - in

Kirovograd, and in the South (Crimea) [1-5]. Cornelian cherry is a culture the most adapted to adverse soil and climatic factors; it does not require special care and is able to provide guaranteed high annual yield [6].

Cornelian cherry is really a late-summer king of Ukraine, when its fruits are actively picked, sold fresh at every market and road sides, and processed in various ways. Cornelian cherry is a real master plant of Eastern Europe traditions. Its fruits are not very much involved in the modern trade of "forest fruits", but, at the same time, so strongly rooted in local uses. They are preserved in all possible ways: dried, in compote, with sugar, boiled until the paste is dense enough, sometimes pickled. The use is almost invariably associated with some putative benefit to health. It had also been used as a vitamin C supplier to seamen in war time [13].

Cornelian cherry has been also subject to selection; therefore several improved varieties are available. We visited a wonderful example of cornelian cherry exploitation - a nursery in the Donskoe village, Crimea, where about 16 varieties of cornelian cherry are propagated and sold to national and foreign amateurs [13].

Resources of wild Cornelian cherry in Ukraine are not permanent; areas and its productivity are reduced due to human activities. In addition, forest forms of Cornelian cherry fruit are not regular enough, they give small, not very juicy fruits, especially in dry years with yield of 3-5 kg per bush. In the culture, from one fruiting plant one has in average from 20 to 80 kg, from plants at the age of 50-60 years - up to 150 kg of fruits from one tree..

According to Prof. S.V. Klimenko [1-5], the area under forest Cornelian cherries in 1947 was estimated in the Crimea as 130 thousand hectares, while in 1988 there were already not more than a thousand hectares. Today, the area is even smaller.

At the beginning of the XIX century many Cornelian cherry bushes were planted in the Donetsk, Dnipropetrovsk, Chernihiv regions, and in the suburbs of Kiev where they still thrive. Cornelian cherry spread at the territory of Ukraine together with Christianity. Monks, coming from Chersonese to the north, brought with them seeds and seedlings of plants of the Crimea, putting them near their monasteries. Many cultures did not survive the harsh conditions, while the Cornelian cherry came to Kiev where the fruits are growing for many centuries in monastic gardens. This is indicated by names of some varieties, such as Vydubychi, Vladimirovka, Lukyanovskaya. It was the monasteries that stood on the great trade route "from Varangians to Greeks", and laid the first commercial orchards [6]. About fifty trees over 120 years old are growing up in Alexandria arboretum (Bila Tserkva), on the former estate of Countess Branycka. A dozen of very old plants are still in the garden of the Kiev-Pechersk Lavra, at the Botanical Gardens of the Central State University and the National Botanical Garden in Kiev. Near the museum of T. G. Shevchenko in Kiev, in the Kolodyazhni village of the Volyn region Cornelian cherry is growing which was brought over a hundred years ago from the Caucasus [6]. Science of today continues to explore the culture of Cornelian cherry in various regions of Ukraine. Most work is done by the M.M. Grishko National Botanical Garden. Prof. S. Klimenko coordinated the activities of the gene pool to create various forms of Cornelian cherry, selection of promising varieties and putting them into culture. According to her, in Kiev during 40 years of observations there were thirty-eight Cornelian cherry full crops, and only two incomplete ones. B. Mezhenko gives data on Artemovskaya Experiment Station (Donetsk region) where poor harvests of Cornelian cherry were not observed during 33 years [8]. This information is confirmed by L. I. Taranenko, the oldest Ukrainian grower, the Honored agronomist of Ukraine.

She has repeatedly pointed out in her publication [10] that Cornelian cherry provides high yields in the most unfavorable soil and climatic conditions.

Cornelian cherry in Crimea

Since ancient times the inhabitants of the Crimea harvested wild fruits and berries in forests, of which more than 70% were Cornelian cherries. It was bought by canneries and confectioneries; each family was making jam, marmalade, dried fruits and pitas for compotes. Residents believe that the Crimean cornel fruit is extremely useful for all kinds of diseases. Since ancient times, all famous doctors stopping in Tauris did not stay there for a long time just because they saw abundance of forest Cornelian cherry - the best healer of all diseases [7].

H. H. Steven, the founder of the Nikitskiy Botanical Garden, wrote that in some orchards along the Kacha river they bred large Cornelian cherries, pear-shaped size of a small pear nutmeg, used for cooking jam and marmalade. He still in 1838 mentioned a rare breed of yellow Cornelian cherry. Now, this kind occurs quite infrequently. First, the parent bush was allegedly found in the woods by M. Kefeli, the Kaczynski garden owner who introduced it to the culture. These translucent fruits are yellow-amber in color, in the jam they are not only delicious, but also have a very attractive appearance [12].

Academician P. Pallas noted that large-fruited varieties of Cornelian cherry are common in the Crimea, especially in gardens of Kachi and Salgir. These fruits are characterized by beautiful dark red large fruits, pear-shaped, used to make jams, marmalades, fruit candy; they are used also in a pickled form. Since the days of ancient Greece, green fruit with a bay leaf is salted with fennel. In appearance they resemble famous olives and are excellent addition to meat and fish dishes [9].

L. P. Simirenko drew attention to the fact that large-fruited Cornelian cherries fast maturing form is cultivated in the gardens of Kachi in a small number, which ripens two weeks earlier than the typical form [11]. The famous gardener pointed out that Cornelian cherry ripens unevenly, so the harvest is collected in several stages. For the purposes of exporting, the fruits are removed half-ripen, as soon as they begin to pink. On the way berries reach readiness, taking the inherent variety in color. The scientist mentioned that in the Crimea there are quite significant cornel trees bringing to the owner a regular large income. The bulk is in Kachi gardens, from where they are annually trafficked in the amount of 3-5 thousand pounds, in the valley Belbek they get 2-3 thousand pounds. Prior to the construction of the railway, Cornelian cherries were transported in baskets enclosing about 8 kg each, they were taken by the carts not just to the north, to the capital, but also to major cities, such as Kiev, Odessa, Mariupol, Rostov, Taganrog and Kharkov. L. P. Simirenko drew attention to the fact that Cornelian cherry grows well and far north of the Crimea. Thus, its lucrative plantations were found in Verhnedniprovsk and Ekaterinoslav provinces. There Cornelian cherry was grown in fat and fairly crude, but non-irrigated soil [11].

A. Mokoschenko, a villager of Donskoe village described his Cornelian cherry tree [14]. During more than 20 years, of all the technical measures he applied only one thing to his tree - cleaning. The annual yield is 30-40 buckets. After collecting a couple of buckets in the evening, the owner takes them to the morning market, where Cornelian cherry is taken literally by hand. After quick selling out, the retired person returns home by bus to collect two more buckets in the evening. Unevenly painted fruit over night gets even deep red color and a compelling presentation. One bush yields income greater than all other 25 acres of the garden.

Similarly, in the Zolotoe pole village of Kirovskiy district, a family of V. Zenchuk annually gets from a 30-year old tree up to fifty buckets of choice fruits, and they do not need to go to the market: they put up the buckets out of the gate and count money [15]. Now along the Yalta highway from Simferopol to Angarsk pass, one can buy fresh Cornelian cherry in season, mainly from woods, and cornel jam during the offseason.

A lot of owners of private plots planted Cornelian cherry without destroying the existing trees and shrubs. Cornelian cherry needs shadow in its younger years. It feels good between growing over it and around it fruit crops [6]. In 2010 Volkovs laid the first hectare of their cornel garden [13]. Trees are planted in thickened scheme: 2.5 x 2.8 m, i.e. 1600 trees per hectare instead of 400. Feedback from them will be twice as fast. In the future, during the closing of Cornelian cherry crowns, the less valuable trees will be removed, while the best will be transplanted.

There are many arguments in favor of this culture. In the case of apple trees, for pesticides only per hectare it is necessary to spend not less than one thousand dollars, while Cornelian cherry in the Crimea has no pests and diseases, it does not need protection, provides environmentally friendly products with no additional cost. This feature allows one to plant cornel gardens in the sanitary protection zones - in the resort area, near settlements, reservoirs, wells, ponds and rivers. One does not need trellises, forming and cutting annual detailed - to the extent necessary, the only sanitary pruning, when they cut loose, broken, or just unsightly thickening shoots. For normal growth and fructification Cornelian cherry required 750 mm precipitation. There is about 430 mm in the Crimea. But it will yield without irrigation. If, however, one gives it the right amount of moisture, it turns out each year an abundant harvest. According to Kiev and Donetsk scientists, Cornelian cherry there behaves similarly. If a garden has been planted - the harvest will be for three hundred years. This is a real hassle-free gardening [6].

Demand for Cornelian cherries is very high. It is perfectly stored in the refrigerator for months without losing its quality. For Cornelian cherry garden during harvest wholesale price does not drop below \$ 2 dollars per kilogram. From one hectare of the garden with a low yield of 0.4 tons per hectare one can get more than 600 euros [6].

In 1947 there were 110 thousand hectares of wild Cornelian cherry in Crimea. In 1980 - there were only 1 thousand hectares. In Kizilovka (Simferopol region) in Soviet times there were 4 food factories with 80 % of production related to Cornelian cherry. They accepted any quantity of Cornelian cherry for processing; carts carried it around the clock. During the war they did a well-known cornel flat cake that has rescued soldiers from scurvy. The flat cake was produced by pressing cornel and then drying it up. During the war they produced also a substitute coffee of cornel stones [13].

Collectors became encampments in the woods for weeks and spent harvesting Cornelian cherry, posting the highest quality at the factory - for the money, overripe to a barrel for producing strong fermented drink (kizilovka), and the rest for producing dried fruit, jam, wiped on pita bread and candy for themselves. Now Cornelian cherry bush in the forest can be found with difficulty. Today, there are just a few plants that can take Cornelian cherry for processing. There are no fruit-bearing commercial orchards in Ukraine today [6].

In the Volkov nursery in selo Donskoe, Simferopol region, there are 16 grades of cornel. One-year saplings give harvest the next year [13]. All the grades in the Volkov nursery were nurtured by S. V. Klimenko [1-4]. Cornelian cherry possesses one very

important property: for planting it does not require a separate place in a garden. They put it as a sealant between apple trees, pears, peaches, sweet cherries and even under a grape arbor. In shadow it feels perfectly and everywhere gives a full crop [13]. The main feature of the culture is that it does not like some fertilizers in soil, especially during planting, and demands protection against sun in the first years of life. The moisture and mulching of near-trunk circles is necessary; there where watering is plentiful, it is possible to do without mulch. The cornel gives a plentiful and annual crop since second year after planting. It is easy to collect it. Plants are low, branches are flexible, it ripens almost simultaneously and perfectly afterripen. It is very transportable and long stored, and processing products are unusually tasty [13]. Volkov's family has written a book «Gardening without problems» [6, 13]. They organize the annual seminar in the nursery-garden on a theme: «Gardening without problems». In the seminar program - nursery and garden survey, answers to questions, tasting of fruits and products of their processing.

As it was informed by E. M. Halilova, the Head of the Agricultural cooperative society "YMUT" in Petrovo village, Belogorsky region, Crimea, the cooperative's field of activity includes collection and realization of dry wild-growing fruit and berries [17]. Collection and laying-in of wild plants is conducted basically in mountains of Crimea. The assortment totals more than 60 positions. The industrial base of the cooperative society is located in non-polluting area of Crimea - foothills of Karabi-jajly. All after-harvesting processing takes place there. 200 persons are working in the cooperative society. The process of preparation (drying) of Cornelian cherry is the following [17]. Local residents of this village leave for woods at 5 o'clock in the mornings to collect wild (wood) Cornelian cherry. The wild cornel is collected in a gully at foothills. It grows mixed up with wood nut (wild filbert). The collected Cornelian cherries are then sorted out. Cornelian cherries after collection should be stored in boxes for a few days. Fresh Cornelian cherry is sold in supermarkets. The rest is dried [17]. At first it is placed in special wooden boxes, and then transferred to a separate room where the self-made drying is organized. The chamber represents a room, in one part of which there is a stove (earlier it was heated by fuel, and then they have altered it and began to heat it by firewood), and in another part - there is a separate room in which cornel is dried. There is a grid on the floor, under which there is a space where warm air circulates. Cornelian cherry is placed on the top of the grid. The dried up cornel is sorted out manually by children, they separate rotten or spoiled fruits, putting the dried up cornels in bags. From Cornelian cherry it is possible to prepare syrup or jam [17].

Economic importance of Cornelian cherry

Prof. S. V. Klimenko from the National Botanic Garden of the National Academy of Sciences of Ukraine during many years has been carrying out research on the introduction and breeding of non-traditional fruit plants including Cornelian cherry. As the result, 14 varieties of Cornelian cherry have been registered in the State Register of Plant Varieties of Ukraine [1-5].

The fruits of Cornelian cherry are nice juicy drupes with a pleasant sweet-sour taste and the specific flavor. Cornelian cherry is used as a fruit, medicinal, and ornamental plant. Delicious sweet-sour fruits with a distinctive flavor are eaten raw, as well as used for production of fine taste jam, jelly, marmalade, extracts, syrups, toppings, kvass, and fruit compotes. Refreshments from Cornelian cherry are very tasty. Methods of using Cornelian cherry as food raw materials are very diverse. Local people where Cornelian cherries are known from immemorial time prepare national dishes from Cornelian cherry. Especially appreciated are

Caucasus products called "Turshu" and "Lavash" – these are concentrates (they are stored for a long time) used as product with high content of vitamins, and fine seasoning for various dishes, especially meat. Fresh fruits can be stored for a long time, frayed or sprinkled with sugar. Very tasty are Cornelian cherries frozen and canned in sugar syrup. In Crimea, the Caucasus, Moldova fruits are widely used for preparation of dietetic products. Of these, they make paste and jelly to feed sailors and astronauts during extended expeditions. Due to the pharmacological properties of fresh fruits and Cornelian cherry juice, they are used as astringent, tonic, antifebrile, appetizing, antiscorbutic, antirheumatic, and antidiabetic agents. Valuable properties have not only the fruits of Cornelian cherry. Almost all parts of plants are used – fruits, shoots, leaves, bark, roots, and seeds.

There are many recipes of different foods prepared from Cornelian cherry published by Klimenko [1-4] and supplied in private communications [13-17], such as Cornelian cherry in sugar, Lavash, syrup, juice, jam, candied fruits, jelly, marmalade, compote, wine, fruit drink, marinated Cornelian cherry, Cornelian cherry liqueur, pickles and so on [18].

Morphological and biological characteristics of Cornelian cherry

Plant of Cornelian cherry is a shrub or a tree of 2-5 m tall, with a trunk commonly up to 25 cm, sometimes up to 45 cm in diameter. In culture, it can be grown as a shrub with multiple trunks or tree, formed, forming a straight trunk and a beautiful round or pyramidal compact, leaf-bearing crown [1-5].

Stem has a gray bark with desquamation. Multiple-shrubby Cornelian cherry is characterized by intensive appearance of stool shoots from hypocotyl and epicotyl. This type of young shoots formation continues for many years as a result of continuous recovery of above-ground parts to replace the dying paranasal stumps. This explains the longevity of Cornelian cherry. Cornelian cherry trees outside forests live and give fruits up to 150 years, and even longer. Cornelian cherry forms a strong root system, but it occurs superficially (20-120 cm from the soil surface). Vertical root (often poorly defined) is deep into the soil by only 80-100 cm, while horizontal roots are much longer. They are well branched and form a dense active lobe. The bulk of skeletal roots are at a depth of 10-60 cm. In the upper layer it is concentrated 40-60% of physiologically active roots. In plants of the age of less than 5 years, the root system occupies less than the projected area of the crown, in 5-7-years-old – it is approximately equal to the projection of the crown, and in 70-years-old tree the root diameter reaches 4.6 m, while the projection of the crown is only 2.2 m. Deep roots of Cornelian cherries concentrated in the upper soil horizon promotes using of even small rainfall, but at the same time, the plant lacks moisture, especially under heavy load of the harvest.

Fruit is a succulent drupe, in the nature it has cylindrical or elliptical shape, but in the culture – oval, pear-shaped, bottle-shaped, cylindrical, elliptical. Coloring of fruits is from light to dark, almost black-red, there are varieties with yellow and pink fruit. Taste of fruits is sweet-sour, sour-sweet, with a pleasant specific scent [1-5]. Flowering of Cornelian cherry is earlier than other fruit crops – in March to mid-April, when average daily air temperature is 6-11°C before leafing. Flowering lasts 12-15 days. By the end of flowering, vegetative buds bloom. Short-term decrease in temperature does not damage flowers by frost. Cornelian cherry is a self-unfertilized plant: within one plant there is no pollination between flowers. For pollination it is necessary to plant several varieties – at least two plants.

Fruiting of Cornelian cherries appears annually and abundantly.

Yield per plant at the age of 5-10 years is 8-25 kg, 15-20 years – 40-60 kg, 25-40 years – 80-100 kg. The period from late flowering to early ripening of Cornelian cherry is 110-120 days (total duration of the growing season for Cornelian cherry is 192-196 days). A wide range of Cornelian cherries culture testifies their undemanding to soil and climatic conditions and relatively high winter hardiness. During the years of observations in Kiev there were no serious injuries of Cornelian cherries by frosts even in the most severe winters when temperatures dropped to -35 °C [1-5]. In comparison with other fruit plants, Cornelian cherries are undemanding to soil texture, and to their fertility. However, the highest yields, it gives in open areas with fertile soils, especially rich in calcium. Adequate soil moistening has very good influence. With good lighting and sufficient moisture, the plants develop strong root system, during the growing season they give big boosts, form well-developed crowns; they have juicy, bright-colored sweet fruits. Featuring a high yield, Cornelian cherry does not require special farming. It does not need special pruning, in fruiting plants they thin crowns for better coverage and make sanitary pruning – remove dry, interlacing branches.

Care for Cornelian cherry is reduced mainly to the removal of weeds, and if necessary – to watering. For the shallow root system it is of particular importance mulching of tree trunks circles. As the mulch one can use any organic material – cutted grass, mold, straw, hay and sawdust. Cornelian cherry is a valuable fruit tree. The main biological features of species: there is no periodicity in fruiting; biological productivity under favorable growing conditions is 25-100 kg per tree, depending on its age: The duration of the productive period is 100-150 years. Plants almost do not damaged by pests and diseases and require no processing chemicals. There is a technology for vegetative propagation of Cornelian cherry. The main method of reproduction is budding, seed yield is 90-98%. Effective and other methods of reproduction – layering – 85-90%, softwood cuttings – 75-78%. Rootstocks for grafting are Cornelian cherry seedlings [1-5, 6].

Cornelian cherry varieties in Ukraine

In the State Register of varieties of Ukraine, Cornelian cherries were not mentioned until 1990. Now there are 14 officially registered varieties and a large hybrid fund resulting from breeding. Cornelian cherry varieties in the Register of Plant Varieties of Ukraine are as follows: Vavilovets, Vladimirskiy, Vydubitskiy, Grenadier, Eugenia, Elena, Coral Marka, Lukyanovskiy, Nezheniy, Nikolka, Radost, Svetlyachok, Semen, Exotic, Elegant, Yantamiy [1-5]. The detailed description of cultivars one can find in Klimenko's publications [1-4] and in Volkov's book based on years of observing them in his nursery garden [6, 13].

Cornelian cherry as a medicinal plant [1-4, 6]

High nutritional and medicinal properties are due to the presence in Cornelian cherry fruit pectins, easily digestible glucose and fructose, vitamins, minerals – iron, potassium, calcium, phosphorus, magnesium, which are beneficial for patients with diseases of the cardiovascular system. Cornelian cherry fruit is an excellent source of scarce, highly digestible polyphenols, and ascorbic acid. Polyphenols are known to have hypertensive and capillary strengthening action. Of particular importance are the biologically active substances, a lot of which are in fruits. These are catechins, anthocyanins, flavonols, and so-called R-active compounds. They normalize permeability and elasticity of blood vessels, preventing sclerosis, and maintaining normal blood pressure.

Decoction of fruits and leaves is used as a general health-improving agent. From fresh fruits they prepare syrup used to treat scurvy, anemia, gastric diseases, and erysipelas of the skin.

Decoction of fruits used in rickets, sore throat, scarlet fever, measles, gastrointestinal diseases, decoction of the roots and bark - to treat malaria, rheumatism, and especially inflammation of the liver, hepatitis, the decoction of the leaves and bark - for kidney and liver. Infusion of shoots with leaves is used as a cholagogue for liver and gallbladder. Jelly from fresh and dried fruits, decoctions of the dried, crushed with stone fruits help in case of gastrointestinal diseases. Juice from fresh and tea from dried fruits are used to improve digestion and increase appetite. Folk medicine of the Caucasus recommends fruits in the metabolic and electrolyte metabolism. Cornelian cherry is good in the case of hemorrhoids. It is necessary to eat a glass of berries together with stones with water or with something else. They say that in three days sometimes there is an absolute recovery. This is due to massage of intestines by stones and special properties of cornel [13].

Fruits and decoctions from leaves are used to treat diabetes. A large number of organic acids creates optimal conditions for the action of natural insulin, and have a very good effect on carbohydrate metabolism. From fruits they produce a phytoncide drug for the treatment of bacterial dysentery, essence of fresh bark Cornelian cherry is used in homeopathy. Chopped roasted seeds have antibacterial activity and are used for wound healing. Seeds and leaves of Cornelian cherry are used as substitutes for tea and coffee. Cornelian cherry is a wonderful bee plant, flowering one of the first fruit trees and is a source of early honey gathering.

Leaves have choleric, diuretic and hypoglycemic action. For preparing infusion of leaves, one should add 1 cup of hot water to 1 tablespoon of leaves, and boil the mixture in an enamel pan for 15 minutes. The mixture is cooled, filtered and the volume adjusted to the original one. 1/3 of a cup is taken 3 times daily before meals. Fruits are used in dried and fresh form in cases of anemia, inflammatory diseases of the gastrointestinal tract, flu, sore throat and rickets. The broth is made from the fruits by taking 2 tablespoons of raw materials per one glass of hot water, and boiled for 30 min. Filtered hot and brought the original volume. Take 1/3 of a cup 3 times a day. For children the cooked jelly is prepared by taking 3 tablespoons of fresh or soaked fruits and 1 cup of water. Take 1/3 of a cup 3 times daily before meals.

In case of liver disease, metabolic disorders, muscle atrophy, nerve disorders, sclerosis they used the following decoction: 3 parts by weight of Cornelian cherry leaves, 3 parts of hips, 2 parts of peppermint leaves and 1 part of lemon balm leaves. 600 ml of cold water is placed into 100 grams of powdered mixture, put in a cool place for 10-12 hours, and boiled for 5 min. drawn for 30 minutes. Drink 200 ml three times a day an hour after eating. In case of the same diseases they use a decoction of the bark

of young Cornelian cherry branches. One tablespoon of shredded bark (fresh or dried), pour 350 ml of cold tap water. Draw and cook the same way as in the previous recipe. Take 100 ml 3 times daily after meals. Roots of Cornelian cherry are good from kidney stones. 10 g of ground roots of Cornelian cherry pour 1 liter of water boiled to 300 ml, strain off and drink 3 times a day for 100 ml. Treatment for 10 days, if necessary - repeat after 2 weeks.

Cornelian cherry fruit is consumed fresh or dried in the case of hematonemic anemia, inflammatory diseases of the gastrointestinal tract, vitamin deficiency, measles, influenza, scarlet fever, rickets, sore throat, as an astringent for diarrhea. Fruits as tonic and appetizing agents are good in tuberculosis, back pain and tinnitus. They improve the metabolic processes in the body, so widely recommended for diseases of joints, skin diseases, gout, and as a diuretic and anti-inflammatory agent in acute inflammation of the bladder, and cystitis. The fruit, pounded with honey and egg yolk is very effective in the treatment of gastrointestinal diseases and disorders. Nectar is a product with content of vitamins and is recommended as a restorative remedy for colds, and flu. Roasted seeds are used to make ersatz coffee, swallow them whole for cleansing the colon, and they are also the most effective treatment for hemorrhoids, eliminating the disease, even those whose doctors refused. In the cortex, Cornelian cherry, its leaves and berries contain organic acids, tannins, pectin and sugar, and vitamin C is not less than black currants and rosehips. In the south they produced dried vitamin pita bread of pureed berries, which during World War I saved from dysentery Russian soldiers on the Caucasus front [6].

Conclusion

It is shown that Cornelian cherry is an important traditional plant that deserves special attention for widespread growing in Ukraine due to its high morphological and biological characteristics, as well as useful nutritional and medicinal properties. Cornelian cherry is a valuable fruit tree with the biological productivity of 25-100 kg per tree depending on its age: The duration of the productive period is 100-150 years. Plants are not damaged by pests and diseases and require no processing chemicals. There are many way of storing and processing Cornelian cherries that allows to preserve useful bioactive components.

Acknowledgement

The paper has been prepared in the framework of the FP7 BaSeFood project financed by the European Union (Grant agreement no. 227118). Authors would like to express their gratitude to all people who supplied important information during performing our case studies in the Crimea.

Поступила 05.2012

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