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RESEARCH ON THE ROLE AND THE IMPORTANCE OF BERRIES SPECIFIC FOR ROMANIAN TERRITORY

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Abstract: *In this paper it is highlighted the variety of berries which are part of spontaneous specific geographical areas and various forms of relief in Romania. It stressed the wide spread of fruits such as the blueberry, the sea buckthorn, the currants, the rosehips, the blackberries and the raspberries. For these fruits is presented the chemical composition the resulting possibilities for their use in human food, such as fresh fruit and also processed products, it also shows their use in the pharmaceutical industry, but also their importance for wildlife specific of the territory in which grows the respective fruit trees.*

Key words: *berries, chemical composition, usage areas.*

1. INTRODUCTION

Between forest products, others than the wood, an important place is occupied by the berries. Their harvest concerned people since ancient times, being a significant source of food. The geographical position of Romania, the landforms and the condition of temperature and soil offers potential of growing to a particularly wide range of plant species, providing fruit for a long period of the year. It's about the seabuckthorn, blueberries, raspberries and blackberries etc. These fruits are provided by trees, shrubs or herbaceous species and their collection is economically beneficial for a significant part of the Romanian population. Some of those species were adapted to crops, where yields are higher, but the concentration of certain valuable components suffers. The nutrients in fruits are easily assimilable, and some of them increase human resistance to certain diseases. Some fruits also contain substances with healing action used as raw material in the pharmaceutical industry or are consumed fresh, in order to strengthen the human body. The berries are a very valuable raw material for food. Their flavor is much stronger than the cultivated fruit. Also, their content in sugars and vitamins is much richer. Many of the species of trees and shrubs have influence on flora and fauna of the forests. Some species are invading such as blueberries, blackberries, raspberries, others are hosts to some frugal diseases. Most of forests species are prized not only for their fruit, but also for other qualities. Thus, some of these species are used to fix and rehabilitate degraded land (wild rose, blackthorn, wax cherry, buckthorn etc), some in protective forest (wax cherry), others for creating hedges (wild rose, blackthorn), others the undergrowth to enrich the soil (hazel, blackthorn). The fruits of many species that grow in the forest are highly sought after by forest and game birds, such as walnuts, hazelnuts, chestnuts and wild edible, sea buckthorn, raspberries etc. Also, the flowers of many species of trees and shrubs are bees, bee being sought for their nectar and pollen (hazelnut, raspberry, black currant, wild rose, wild chestnut). Some species of trees and shrubs are planted in location to create zones and green spaces with ornamental character: chestnuts and wild, the mountain ash, the currant, the rosehips etc.

2. MATERIAL AND METHOD

2.1. The main berries specific of Romanian flore

2.1.1. Red bilberry (*Vaccinium vitis*)

Is a native shrub with numerous underground stems, branches air from escaping, cylindrical, up to 30 cm high. The flowers are white or pale pink, slightly fragrant, honey, grouped by 2-6 in racemes atop the stem. Blossoms in May-June. The fruits are spherical berries, red and chalky at first maturity, with sour-bitter taste. They are

called red cranberries or cranberry contain more seeds and bake in September. Cranberries are preserved well in fresh water and can be eaten as sauce, sugar, sherbet, juice and pickled. Also used in the preparation of wine. Cranberry Tea (leaves and stems) has an effective action in combating kidney disease and urinary tract. The whole plant is rich in tannin and can be used for painting. Cranberry leaves are used in the preparation of medicinal depurative, antirheumatic, antiseptic and diuretic. [2]

▪ *The red cranberry benefits*

- They are very rich in vitamin C but also contain beta-carotene, potassium and vitamin B1;
- Have a tonic effect on blood vessels, they are used to treat varicose veins of urinary tract infections;
- Prevent urinary tract infections caused by the bacterium *Escherichia Coli*;
- Contain the most antioxidants, which turns them into important weapons for the defense of the human body;
- It has been scientifically proven that cranberries have a positive impact in the fight against malignant tumors;
- Contains organic acids are able to reduce fat deposits;
- Are antibacterial, natural antibiotics. [4]



Figure 1: Cranberry red [4]

2.1.2. Black blueberries (*Vaccinium myrtillus*)

It is one of the most important shrubs that grow in our forests hill and mountain. Increases highly branched, up to 0.5 m height. The flowers are pink, solitary, pendent leaves placed in armpits. It blooms in May and June. Fruit, blueberries called black are fleshy berries, black, blue, globular 6-10 mm diameter, covered with a waxy smattering specific. Sweet-sour taste, pleasant, slightly astringent, edible. Ripen in July-August-September, blueberries are consumed fresh, a course of a month increasing visual acuity. But blueberries are widely used in food preparation and concentrated fruit juices, syrups, sweetness, jam and soft drinks. Cranberry juice strong black color dark purple. Blueberry black household can prepare famous "bilberry", and liquor. From blueberries dry result indicated a tea to combat diarrhea. Also, stalks and leaves are commonly used as a tea to reduce blood glucose in diabetes and fighting, with effects similar to those of insulin.

▪ *The blueberries benefits*

- Due to the high concentration of antioxidants, blueberries are a real shield against cancer;
- Intense blue pearls indicates the presence of such large amounts of phytonutrients called anthocyanidins with an important role in neutralizing free radicals;
- Blueberries help synthesize vitamin C in the body, protect blood vessel walls and stimulate the circulatory system;
- Blueberries enhance visual acuity, improve night vision and reduce the risk of cataracts.



Figure 2: Black blueberries [4]

2.1.3. White seabuckthorn (*Hippophae rhamnoides*)

It is a native shrub that grows as a bush. Is very branched and spiny which grows in Romania's sands and gravels from the coastal to mountainous areas, sometimes forming groves and bushes quite stretched. It has small flowers, green, honey, grouped in racemes (globular the male, the female spiciforme). Is blossoming before flushing, in months april-may. Fruits are false berry, ovoid, 7-8 mm diameter, fleshy orange. Taste is astringent, unpleasant and remain on the branches. The fruits ripen in September-October. Fructifies abundantly from the age of 4-5 years, almost annually. One bush produce 3-4 kg fruit from the age of 10 years. The buckthorn fruits are sometimes used as food for pheasants. Their importance lies in the high content of vitamin C (ascorbic acid), over 10 times more than oranges and lemons contain, reaching 500-600 mg of vitamin C per 100 g fruit. Vitamin C from fruits of sea buckthorn does not disappear by boiling, making marmalade made from these fruits also gave great medical value. The orange color of the fruit is due to carotene content. Fruits also contain vitamin A, E, citric acid, mineral salts that give them fresh, sour-bitter taste. Sea buckthorn is prepared from the fruit jellies, marmalades, fruit pulp, juices, liqueurs, wine, brandy. Buckthorn fruits have great medicinal value. After pressing fruit juice is separated from the oil that it contains is used especially for rapid healing of burns and others skin injuries (frostbite, ulceration).

▪ *The buckthorn benefits*

- The buckthorn is used in the food industry, forestry, in the pharmaceutical industry, but also as an ornamental plant;

- Sea buckthorn berry contains two times more vitamin C than rosehips and 10 times more than citrus;
- Fruits are rich sea buckthorn oil extremely beneficial in skin condition;
- Also pressed fruit juice can be consumed as such or turned into syrup, with multiple benefits for health.

2.1.4. The red currant (*Ribes rubrum*)

Is a shrub to 1 m tall with stems without spines. The flowers are greenish yellow or yellow-brown, arranged by the racemes 3-8. Blooms in Aprilie-May. Fruits, red currants are referred to as round with a diameter of 5-10 mm, red, yellow or pink. Rippen in July-August, sweet-sour taste and are edible. Are consumed fresh. Tehy contain vitammin A, B and C an dis pressed into jams, syrups, juices or concentrates, marmalade, paste, wine.

- *The red currant benefits*
 - Red currants are a great adjunct to maintainig eye health;
 - Duet o the high content of vitamins and minerals (especially vitamin C and potassium), red currants are reccomended in neuroses, asthenia, insomnia prevetion;
 - Are beneficial for strengthening the immune system, influence and „red” in the throat and cancer prevetion, hypertension, stress and anxiety, food poisoning;
 - Is consumed fresh as juice or jelly.



Figure 3: White seabuckthorn [4]



Figure 4: Red currant [4]

2.1.5. Black currant (*Ribes nigrum*)

It is a very valuable shrub that grows up to 1.5 m height. Are cultivated in the forest and agricultural sectors. It has the hermaphrodite flowers, big, hairy form of inflorescences called racemes, yellow and red. Blooms in April-May and the flowers are bees. The fruits are spherical berries, black, 6-9 mm diameter. Ripen in June and July. They have small seeds oblong black. There are about 3400 kilogram fruit. In crop year begins to fructify in the third, but gives high yields and yearly between 5 and 15 years. The bush is collected on a 3.5 kg fruit. The fruits of black currant liqueurs prepared (cream of black currant), jellies, jams, marmalades, syrups, juices and concentrates and wine. Thanks to its wealth of vitamins A, B and P, especially C is used in medicine as an infusion, liqueur or syrup, having good effects in treating heart disease, liver, digestive and the urinary and colds. Eating blackcurrants improve visual acuity. [2]

- *The black currants benefits*
 - Contain a large amount of vitamin C (three to four times than oranges), antioxidants (twice higher than blueberries) plus twice the amount of potassium in bananas. Also contain vitamins A, B1, B2, B6, PP, micronutrients such as calcium, phosphorus, iron, bromine, zinc, anthocyanins, tannins, flavonoids, beta carotene, pectin;
 - Strenghten immune system, taking flu, bronchitis and hay fever away
 - Helps increase visual acuity and to correct certain vision problems;
- Helps prevent aging processes, neutralizing free radicals (and may have positive effects treating Alzheimer's disease);
- Helps ligaments, bone growth and development;
 - Stimulates tissue formation;
 - Are used to treat arthritis, kidney stones, gout, lung problems, improves fatigue;
 - Excellent for combating muscle pain associated with exercise;
 - Due to reduced sugar content, berries can be eaten by diabetics;
 - Regarding external use, currants treat boils, dermatitis, eczema, insect bites. [4]



Figure 5: Black blueberry [4]

2.1.6. The mountain rosehip (*rosa pendulina*)

There are about 400 species of wild rose hips, all shrubs. The mountani rosehip is a shrub that grows up to 1m in height. Has flowers usually solitay or grouped 2-5, 4-5 m pink-purple or violet. It blooms from May to July, sometimes in August (at high altitudes). The fruits are oblong, elliptical, about 2.5 cm long. They are edible especially after the first frost. A wild rose bush produces 0.3-0.4 kg fruit. The fruits ripen from the second half of August and in September. Fresly part of the furi tis mainly used in the pharmaceutical industry for the extaction of high vitamin C (10%) and for the preparation of diureic tea. Also udes in the food industry for making plum jam, fruit pulp, jellies, jams and liqueurs. Of dried rosehip can prepare a very pleasant wine.

- *The rosehip benefits*
 - Rosehip is a source of vitamin C and therefore, experts recommend them as a refreshing medicine that banishes fatigue intense;
 - In the composition of these fruits there are other important active substances: vitamins A, D, E, B1 (vitamin good provisions), B2 (support body in demanding action), K (processes involved in blood clotting), minerals and fatty acids which help skin regeneration;
 - Rosehip Tea combat anxiety, nausea, palpitation, increase bile which it recommends in liver diseases;
 - Being very rich in vitamin C (1500 mg/100), rosehip is an ally in boosting immunity.



Figure 6: Rosehip [4]

2.1.7. Forest blackberry (*Rubus hirtus*)

It is a shrub indigenous with crawling, thorn and hairy shoots, with small white flowers clustered in short racemes. Flowering occurs from July to September. Polidrupe fruit are fleshy, globular and detach the hard stalk. They gloss black. Blackberries are sweet-sour taste, pleasant enough. Due to the content in tannins, which gives them a slightly astringent taste, is consumed as fresh low. They are largely used in the preparation of syrups, juices, jams, jellies and marmalades. By fermentation of fruit blackberry wine and liquor can be obtained. Blackberry fruit and leaves are used in the pharmaceutical industry for preparing medicaments against tonsillitis, angina and diarrhea. [2]

- *The forest blackberry benefits*
 - Have strong antioxidant action;
 - Are renowned for their high content of potassium, vitamin C, anticancer compounds and pectin;
 - Are a particularly potent natural remedy in fighting chronic diseases and contain high levels of pectin, a soluble fiber in lowering cholesterol;
 - The most important benefit of these fruits is their ability to stop tumor formation in the oral cavity;
 - Are good for cardiovascular, circulatory and skin affections;
 - Blackberry leaves contain tannic acid and are widely used in herbal medicine.



Figure 7: Blackberries [4]

2.1.8. The raspberry (*rubus idaeus*)

Is the most valuable forest shrub fruit producer. It grows up to 2 m height. Rubus genus includes about 400 species of shrubs and undergrowth. Increase in spontaneous vegetation in the hilly and mountainous areas. It has white flowers clustered in short racemes. Raspberry blooms in May and June, with a duration of flowering 25-35 days. The fruit (raspberry) is a red polidrupa, rarely yellow, fragrant, sweet, with hairs 8-15 mm in diameter. Raspberries ripen in late July to September. Baking duration is 30-40 days. The forest is harvested from natural raspberry bushes between 50 and 250 kg /ha, reaching small areas with favorable conditions, up to 400 kg /ha. The average number of fruit per kilogram is 1680 pieces (chunks 1140-2800), the average weight of a fruit is 0,64g (0,35 to 0,87 g), average fruit diameter of 11,2 mm (8,9-13,5 mm) refractive index of the fruit ripening during intense 13,5% (9,1% -14,8%). Raspberries are consumed fresh or can be dried boil. It can be widely used in the preparation of sweets and confectionery syrups, jams, jellies, marmalades, stewed fruit, jam, sorbet, etc. Raspberry can be produced by fermentation flavor and good quality wine and brandy. In the pharmaceutical industry it is used in preparations raspberry against tonsillitis, angina, diarrhea. From the stems and leaves can be a very aromatic tea. Raspberry fruit used in the preparation of soft drinks, juices and juice concentrates pasteurized and fortified juices. Both forest and agricultural sectors were made with raspberry crops of different varieties that produce fruit between 1,0-5,0 tonnes/ha. [2]

- *The raspberry benefits*
 - Raspberry is rich in ellagic acid, phenolic compound that helps prevent cancer growth-inhibiting cancer cells, and that stops the growth of certain forms of cancer;
 - Raspberry seed oil is a natural sun protection factor. It contains a high proportion of polyphenol known for their anti-cancer role;
 - Raspberry contains powerful antioxidants such as vitamin C and gallic acid;
 - Raspberry helps: burning fat, enhancing the immune system, preventing diseases and a healthy view;
 - It is a rich source of soluble fiber pectin contains small concentration of calcium, potassium, iron and



Figure 8: Raspberry [4]

magnesium, minerals vital for convalescents, but also for cardiovascular disease, fatigue or fever;

- It is a natural astringent, has beneficial effects on the digestive tract and gum disease.

2.2. The chemical composition of berries

Table 1: Nutritional values of berries

Nutritional berry / 100 grams									
Species	Protein [g]	Lipids [g]	Carbohydrates [g]	Calories [cal]	C Vitamin [mg]	Pectin [%]	Tanning substances [%]	Malic acid [%]	Water [%]
Cranberry red	0,40	0,10	4,00	46	13,30	1,10-1,15	0,27-0,36	1,50-1,67	84-87
Black blueberries	0,40	0,13	12,20	46	13,30	1,30-1,55	0,12-0,41	1,30-1,60	86-88
White seabuckthorn	1,20	0,70	10,14	62,9	695	x	x	1,8-2,8	82-84
Red currant	1,40	0,20	13,80	56	41	x	0,26-0,91	1,86-2,15	79-88
Black currant	1,40	0,41	15,38	63	181	0,63-1,67	0,33-0,42	1,64-3,20	81-84
Rosehip	1,60	0,34	38,22	162	426	0,5-0,6	x	0,8-1,04	32-47
Blackberries	1,39	0,50	9,61	43	21	x	x	1,00-2,20	75-80
Raspberry	1,20	0,65	11,95	52	26,20	0,37-0,87	0,13-0,31	0,90-1,60	84-86

x - Missing Data

2.3. Use areas of berries

Rich in vitamins and nutrients, berries can be eaten both fresh and in processed form or other components of finished food products.

Berries are used in:

- Food: the preparation of jams, jellies, compote, jam, they are used in composition or decorating cakes, the cakes are obtained juices and squashes, berries, various soft drinks with taste and aroma of berries, alcoholic beverages, such as are used in obtaining varieties of semi-sweet wine or various other drinks different types of ice cream flavored with berries;
- The pharmaceutical industry: the manufacture of teas, consisting of drugs, syrups, various natural products based on berries;
- Cosmetic industry: to obtain certain oils containing significant amounts of beneficial antioxidants and health maintenance hair, to obtain certain facial masks, some creams.

3. CONCLUSIONS

Berries are considered among the healthiest in the world, and not without reason. Rich in antioxidants, they have many beneficial properties for the body, helping to fortify immunity and combat a long list of conditions, including these:

- Prevent heart disease due to high fiber content of antioxidants and their ability dissolve cholesterol, berries make a valuable adjunct for heart disease, another important effect of strengthening the heart muscles;
- Cancer-fighting compounds in berries can prevent and even cure certain cancers, scientists recommending their consumption especially for colon and liver cancer;
- Antidepressant effect berries have the ability to make you feel more active and in full such as helping your body to fight with depression [5], [6];
- Slow down brain aging, there is strong scientific evidence that shows that regular consumption of blueberries, blackberries and other berries have beneficial effects on the brain and may help prevent memory impairment with age.
- Blueberries are rich in vitamin C, they support the immune system and helps the body to absorb iron. Vitamin C is needed to maintain healthy blood vessels, which protects against breakage and bruises. [7]

Another advantage they have is that they grow in clean areas, very little affected by pollution (sometimes untouched), and furthermore, most of them are specific to the great heights. Another favorable point of them is that, with very rich content of vitamins are easily assimilated, a portion of these fruits equivalent of several boxes of vitamins. [8]

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