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RESEARCH ARTICLE

AN ETHNOBOTANICAL STUDY OF THE MEDICINAL PLANTS IN THE BELOSLAV AREA, NORTHERN BLACK SEA COAST (BULGARIA).

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Abstract

This study is part of an ethnobotanical investigation of the medicinal plants in the Northern Black Sea coast region, which includes the area from the village of Durankulak to the town of Obzor. The boundaries were determined using the map of the floristic regions in Bulgaria. Field work was conducted in the period from June and July 2017. Surveyed were 92 people from 3 communities. The study was carried out on the basis of the survey methodology. Interviews with the local population were conducted using original questionnaires prepared upfront. The respondents belong to different gender, ethnicity, age and education groups. The data from the different applications of medicinal plants in the life of the local population were processed and summarized.

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Introduction:-

The Republic of Bulgaria is situated on the Balkan Peninsula in Southeast Europe. Its territory occupies the temperate latitudes between 41°14'05" and 44°12'45" N. The national territory of the country covers an area of 110,993 sq. km.

Bulgaria's territory is divided into two climate zones – mild continental and continental Mediterranean. The average annual precipitation is between 411 mm and 1000 mm. (Kaprolev et al., 2002).

Bulgaria is rich in natural plant resources. The latest data indicate that there are 4102 species of vascular plants to be found in Bulgaria (Asyov et al, 2012). With respect to the utilization of this plant resource, it is the case that for centuries the Bulgarians have been using herbal remedies to treat some common diseases. One of the first written sources in the country regarding the use of medicinal plants by St. Ivan Rilsky dates back to the end of the 9th and beginning of the 10th century (Nedelcheva, 2011). It states that he used over 80 herbs (Nedelcheva, 2009). Many contemporary authors have examined the use of wild and medicinal plants, for example for culinary purposes (Tcheshmedjiev et al, 1999), for the treatment of ear diseases (Kirilova, 2015) and for variety of applications in general (Koleva et al, 2015). There is also an ethnographic study of the different applications of plants in the everyday life of Bulgarians (Vakarelski, 1977).

The region of the Northern Black Sea coast has not been researched yet in ethnobotanical terms. The purpose of this investigation is to study, in ethnobotanical terms, the medicinal plants in the town of Beloslav and the villages of

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Kazashko and Ezerovo in Varna province. This forms part of a more extensive ethnobotanical study of the medicinal plants along the northern Black Sea coast.

Materials and Methods:-

The study was conducted during the period of June – July in 2017 in three communities: the town of Beloslav (43°18'N, 27°70'E), the village of Ezerovo (43°20'N, 27°76'E) and the village of Kazashko (43°20'N, 27°83'E) in Varna province (Figure 1).

The map of the floristic regions in Bulgaria (Jordanov, 1966) was used to determine the boundaries of the Northern Black Sea coast region.

The investigation was carried out on the basis of the survey methodology. The local residents were interviewed with the help of original questionnaires developed in advance. In total, 92 persons participated in the survey: 72 from the Beloslav and 20 individuals from the villages of Ezerovo and Kazashko. The respondents were selected randomly. They belong to various age and ethnicity groups and have different gender and education background. The study comprises the collection of data regarding the various applications of medicinal plants in the everyday life of the local population. Information was collected regarding the vernacular names of the plants. The taxonomic rank and the denominations of the taxa were adopted in accordance with the International Plant Names Index (IPNI). The work (“Identification Guide to the Plants in Bulgaria”, Delipavlov et al, 2011) was used to identify the species.

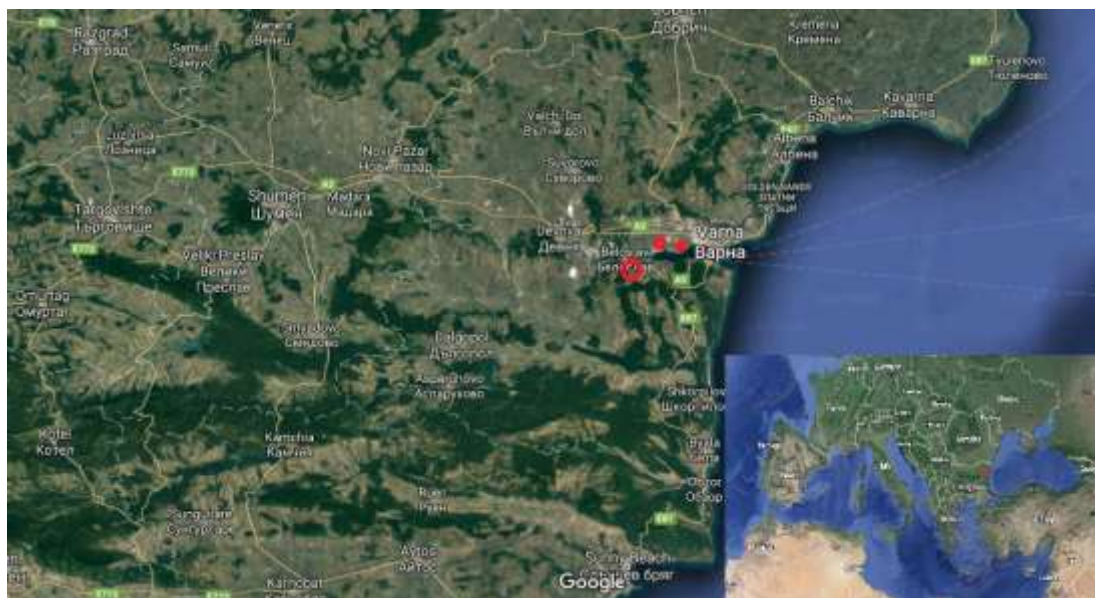


Figure 1:- A map of the communities which residents took part in the survey.

Findings and Discussion:-

1. Demographic characteristics of the respondents.

1.1 **Distribution of the respondents by ethnic origin.** Due to the fact that the survey was conducted in communities with predominantly Bulgarian population, there is no significant presence of ethnicities such as Romani and Turks. The ratio of ethnicities is as follows: Bulgarians – 85 persons (92.39%), Romani – 5 persons (5.43%), Turks – 2 persons (2.71%).

1.2 **Distribution of the respondents by age.** (Table 1).

Table 1:- Age composition of the respondent group

Age Group	Number of respondents (%)
10-20	7 (7.60%)
21-30	8 (8.70%)
31-40	10 (10.87%)
41-50	15 (16.30%)

51-60	11 (11.96%)
61-70	19 (20.65%)
71-80	16 (17.39%)
81 and over	6 (6.52%)

The percentage of respondents is higher in the older age groups which reflects the fact that in smaller communities the predominant part of the residents are on average older than 50.

1.3 Distribution of the respondents by level of education. The participants in the survey comprise: 31 individuals (33.70%) with primary education, 50 individuals (54.35%) with secondary education, and 11 individuals (11.95%) with higher education.

1.4 Distribution of the respondents by gender. We interviewed 31 (33.70%) men and 61 (66.30%) women. The more active participation by women is due to the fact that that men more frequently refuse to take part in surveys.

1.5 Distribution of the respondents by employment. In terms of the respondents' employment we obtained the following results: students - 6 persons (6.53%), employed – 41 persons (44.56%), unemployed - 4 persons (4.35%) and retired - 41 persons (44.56%).

1.6 Distribution of the respondents by place of residence. We interviewed 72 (78.26%) residents of Beloslav and 20 (21.74%) residents of the villages of Ezerovo and Kazashko.

2. Application of the Medicinal Plants in Everyday Life

The study we carried out revealed that in the region under investigation a total of 193 species of plants are used belonging to 166 genera from 68 families.

One hundred (51.81%) of them are medicinal plants specified in the Law on Medicinal Plants (LMP) and forming part of the flora of the Northern Black Sea coast. 8 species of those are found in other floristic regions of Bulgaria. 25 species of medicinal plants are used in the folk medicine.

According to their origin, the used medicinal plants can be split into several groups. The largest group comprises 115 (59.59%) medicinal plants that can be found in the flora of the Northern Black Sea coast. There are 11 (5.70%) medicinal plants that can be found in another floristic region of Bulgaria. A third group comprises 37 (19.17%) species of medicinal plants that are foreign for the Bulgarian flora and these are either species introduced to Bulgaria or imported plants. The cultivated plants used for medicinal purposes constitute 30 species (15.54%).

In total, there are 842 species of medicinal plants in Bulgaria belonging to 444 genera and 118 families. Of those, 730 species of spontaneously spreading vascular plants are specified in the Law on Medicinal Plants (2000). The remaining 114 species are also spontaneously spreading and are described in the literature on medicinal plants in Bulgaria (Zahariev et al, 2015). The wealth of plant resources is impressive also at regional level. By comparison, only in the floristic region of Northeast Bulgaria there are 600 species of medicinal plants (Zahariev, Ivanov, 2014). In the floristic sub-region of the Northern Black Sea coast, there are 593 species of medicinal plants (Zahariev et al, 2015).

The medicinal plants the inhabitants of Beloslav, Ezerovo and Kazashko use in their everyday life comprise 32.55% of the medicinal plants found along the Northern Black Sea coast and 22.92% of the medicinal plants found in Bulgaria. The high percentage of medicinal plants used by the locals reflects the preserved knowledge regarding the use of medicinal plants as well as familiarity with the local flora.

The largest taxonomical diversity of medicinal plants is observed in their application in human medicine.

2.1 Application of Medicinal Plants in Human Medicine (Appendix I)

In the surveyed area, 103 medicinal plants (53.37%) from 89 genera and 45 families are used for the treatment and prevention of diseases in human medicine. Of these species, 50 are included in the Law on Medicinal Plants. The medicinal plants from the indigenous flora constitute 52 species (50.49%), 8 species (7.77%) are from another floristic region in Bulgaria, 24 species (23.30%) are foreign for Bulgaria and 19 species (18.45%) are cultivated as domestic plants.

Among the medicinal plants used, the following families are represented with the largest number of genera: *Lamiaceae* -11 genera, *Compositae* - 10 genera, *Apiaceae* - 8 genera and *Rosaceae* - 8 genera. These comprise the

medicinal plants most frequently used in the folk medicine by the local population, such as *Achillea millefolium*, *Anethum graveolens*, *Calendula officinalis*, *Hypericum perforatum*, *Matricaria chamomilla*, *Mentha piperita*, *Origanum vulgare*, *Sambucus nigra*, *Thymus sp.*, *Tilia tomentosa*.

Predominantly, the medicinal plants used come from the indigenous flora (50.49%). In this case, the geographical principle is the chief reason for the people's preferences. They mainly use plants that are widespread in proximity to the place where they live. This demonstrates that the knowledge for using medicinal plants in the human medicine has been well preserved.

The medicinal plants that are typical for Bulgaria but are widespread in other floristic regions comprise 4.15%: *Allium ursinum*, *Arctostaphylos uva-ursi*, *Atropa belladonna*, *Coriandrum sativum*, *Geranium macrorrhizum*, *Salvia officinalis*, *Sideritis scardica* and *Vaccinium vitis-idaea*.

Medicinal plants foreign for Bulgaria and used in the human medicine constitute 12.44%. Some of these are available through the retail network - *Camellia sinensis*, *Cinnamomum zeylanicum*, *Citrus limon*, *Zingiber officinale*, while others are grown in yards and gardens - *Calendula officinalis*, *Lavandula angustifolia*, *Ocimum basilicum*, *Tanacetum balsamita*, *Rosmarinus officinalis* etc.

The high percentage (23.30%) of foreign for Bulgaria medicinal plants used in the traditional medicine means that the local inhabitants are open to the use of new and different medicinal plants. The utilized cultivated plants (9.45%) in the folk medicine such as *Allium cepa*, *Allium sativum*, *Anethum graveolens*, *Beta vulgaris*, *Brassica rapa*, *Petroselinum crispum*, are predominantly those that people grown in their yards and gardens.

For reference, in the area of the Northern Black Sea coast to the north of Varna up to the village of Durankulak (Boycheva, Kosev, 2017) there are 96 species of medicinal plants used in human medicine. Of those, 22 species are not used in human medicine in the area of Beloslav yet for the surveyed area there have been established 29 species of medicinal plants, new in terms of ethnobotany, that are used in human medicine. Some of them are typical for the floristic sub-region of the Northern Black Sea coast: *Arum maculatum*, *Hedera helix*, *Humulus lupulus*, *Trigonella caerulea*, *Linum usitatissimum*, *Agrimonia eupatoria*, *Crataegus pentagyna*, *Potentilla reptans*, *Sorbus domestica*, *Galium aparine*, *G. verum*, *Leucojum aestivum*, *Cisium arvense* etc. An interesting fact regarding the Beloslav area is the use of typical herbal plants for medicinal purposes which plants are not used for medicinal purposes in the area to the north of Varna up to the village of Durankulak: *Allium ursinum*, *Nectaroscordum siculum*, *Armoracia rusticana*, *Satureja hortensis*, *Cinnamomum verum*, *Levisticum officinale*, *Syzygium aromaticum*, *Curcuma longa* and *Trigonella caerulea*. Other medicinal plants that are new in terms of ethnobotany for the surveyed area are: *Callisia fragrans*, *Cucurbita sp.*, *Vaccinium vitis-idea*, *Atropa belladonna*, *Lycium barbarum*, *Solanum lycopersicum*.

As a matter of curiosity, in Beloslav branches of *Lycium barbarum* are used for dental problems.

2.2 Application of Medicinal Plants in Veterinary Medicine (Appendix I)

The survey results report that 5 species belonging to 5 genera and 5 families are used in veterinary medicine: *Allium sativum*, *Cotinus coggygia*, *Hypericum perforatum*, *Matricaria chamomilla* and *Salix sp.* Three of these species grow naturally in the area and two are cultivated plants. Three species are included in the Law on Medicinal Plants. The limited use of medicinal plants in veterinary medicine is due to the fact that a large percentage of the respondents, 21.17%, are young people 10 to 40 years of age who do not raise agricultural animals. The majority of the respondents, 78.26%, are inhabitants of the town of Beloslav, where it is not common to raise agricultural animals. It is also the case that a larger part of people raising animals prefer to treat them with ready to use medicines available at the veterinary pharmacies. By comparison, in the area to the north of Varna up to Durankulak there are 18 species of medicinal plants used in veterinary medicine (Boycheva, Kosev, 2017).

2.3 Application of Medicinal Plants for Cosmetic Purposes (Appendix I)

For cosmetic purposes, the local inhabitants use 16 species of plants (8.29%) from 16 genera and 15 families. Of those, 4 species appear in the Law on Medicinal Plants, 7 species (8.29%) belong to the indigenous flora, 4 species (2.07%) are foreign for Bulgaria and 5 species (2.59%) are cultivated plants.

Most widely used are the species *Calendula*, *Matricaria*, *Citrus limon*, *Cucumis sativus*, *Cotinus*. The relatively limited use of medicinal plants for cosmetic purposes can be explained by the fact that only women have indicated

the use of medicinal plants for cosmetic purposes and these women are overwhelmingly younger than 50. It should also be stated that the use of medicinal plants for cosmetic purposes is more labor-intensive and time-consuming than using a ready-made cosmetic product. The ready-to-use products most often contain extracts or oils derived from *Amygdalus*, *Aloe*, *Urtica*.

For cosmetic purposes, the medicinal plants are most often used for washing hair, face masks or cleansing the face. For reference, it has been reported (Kultur, S., Semra, S., 2009) that in the area of the town of Ispirih located in Northeastern Bulgaria, there are three species of medicinal plants, *Allium cepa*, *Juglans regia* and *Urtica dioica*, which in the Beloslav area have the same application, namely for washing hair.

2.4 Application of Medicinal Plants as Food and Condiment (Appendix I)

The results show that in the surveyed area 58 species of medicinal plants (30.05%) from 52 genera and 23 families are used as food and condiment. About a half of these, i.e. 30 species (51.72%), form part of the indigenous flora, 3 species (5.17%) are typical for another phytogeographical region of Bulgaria, 14 species (24.14%) are foreign for the Bulgarian flora and 11 species (18.97%) are cultivated as domestic plants.

Again, the indigenous species prevail, 51.72% - *Corylus avellana*, *Cornus mas*, *Ficus carica*, *Juglans regia*, *Urtica dioica*, *Foeniculum vulgare*, *Mentha piperita*, *Origanum vulgare*, *Thymus sp.*, *Trigonella caerulea* etc.

There are 27 species of medicinal plants used for food. Twenty of those are typical for the area - *Chenopodium alba*, *Cornus mas*, *Corylus avellana*, *Crataegus monogyna*, *Ficus carica*, *Fragaria vesca*, *Juglans regia*, *Malus sylvestris*, *Mespilus germanica*, *Portulaca oleracea* etc., while 4 species are cultivated as domestic plants - *Allium cepa*, *A. sativum*, *Amygdalus communis* and *Spinacia oleracea*. A medicinal plant typical for another floristic region is *Morus nigra*. Two of the medicinal plants used for food are foreign for the Bulgarian flora - *Ziziphus jujuba* and *Helianthus tuberosus*.

In Bulgaria, there are 88 species of wild medicinal plants used by the local population for food (Nedelcheva, 2013). In the Beloslav area, 20 species of medicinal plants growing naturally in the area are used for food which constitutes 27.23% of the edible plants for Bulgaria. This percentage is high in light of the fact that the survey was conducted in a small area with vegetation typical for the Northern Black Sea coast. We can infer from this that the locals are familiar with and optimally use the plant resources in the area they inhabit.

It is of interest to note that the use of *Urtica dioica* for food is exceptionally high among the local residents. Most frequently, it is used fresh to prepare soups and other dishes in the spring season. It is not seldom for it to be stored dried or frozen for consumption during the winter.

There are 27 species of medicinal plants used as condiment. Of those, 8 species (29.63%) are typical for the indigenous flora: *Allium ursinum*, *Anethum graveolens*, *Mentha piperita*, *Mentha spicata*, *Nectaroscordum siculum*, *Origanum vulgare*, *Thymus sp.*, and *Trigonella caerulea*. 13 species (48.15%) are foreign for Bulgaria (48.15%): *Ocimum basilicum*, *Rosmarinus officinalis*, *Satureja hortensis*, *Myristica fragrans*, *Sesamum indicum*, *Piper nigrum* etc. The cultivated plants used as condiments comprise 6 species (22.22%): *Allium cepa*, *A. sativum*, *Petroselinum crispum* etc.

Besides the traditional herbs such as *Anethum graveolens*, *Satureja hortensis*, *Mentha spicata*, *Petroselinum crispum*, the widespread use of *Nectaroscordum siculum* also stands out. In this area, the honey garlic is consumed fresh or, when dried, is added as one of the ingredients of the highly popular *sharena sol* ("colorful salt") condiment. Note that the study regarding the Ispirih area (Kultur, S., Semra, S., 2009) describes 7 species of medicinal plants used as condiments. The significantly more pronounced diversity in the Beloslav area is due to the fact that this study also considers the species foreign for Bulgaria as well as the cultivated medicinal plants used as condiments. The inhabitants of the surveyed area use *Allium ursinum* and *Nectaroscordum siculum* which are not mentioned in the study carried out in the Ispirih area. In the latter, *Armoracia rusticana* is consumed as a condiment while in the Beloslav area it is only used as a preservative.

2.5 Application of Medicinal Plants as Beverages, Beverage Flavorings and Colorants (Appendix I)

In the surveyed area, 38 species (19.69%) of medicinal plants belonging to 36 genera from 21 families are used to prepare beverages, as beverage flavorings or colorants. The medicinal plants specified in the Law on Medicinal

Plants constitute 14 species. This group comprises 20 species (52.36%) medicinal plants from the indigenous flora, 1 species (2.63%) from another phytogeographical region of Bulgaria, 7 species (14.42%) are foreign for the Bulgarian flora and 10 species (26.32%) are cultivated as domestic plants. The plants most often used in the preparation of beverages are: *Sambucus nigra*, *Prunus cerasifera*, *Cicer arietinum* etc. To flavor beverages, the plants most often used are: *Pelargonium roseum*, *Mentha piperita*, *Citrus limon* and *Artemisia absinthium*. To color beverages, including alcoholic ones, the locals use: *Morus nigra*, *Juglans regia*, *Quercus sp.*, *Cotinus coggygia*.

Within this group, the species of the *Artemisia* genera are extensively used extent for the flavouring of wines since the livelihood of the local residents chiefly focuses on viticulture and winemaking.

2.6 Application of Medicinal Plants as Preservatives (Appendix I)

To prepare home-made preserves, the locals use 11 species (5.70%) of medicinal plants related to 11 genera from 6 families. Three of those species are specified in the Law on Medicinal Plants. Regarding their origin, 5 species (45.45%) of medicinal plants belong to the indigenous flora - *Anethum graveolens*, *Brassica nigra*, *Cerasus vulgaris*, *Pyrus communis*, *Zea mays*. One species (9.09%), namely *Morus nigra*, comes from another phytogeographical region of Bulgaria, another species (9.09%), *Piper niger*, is foreign for the Bulgarian flora, and 4 species (36.36%) of medicinal plants are cultivated as domestic plants - *Apium graveolens*, *Armoracia rusticana*, *Cydonia oblonga*, *Zea mays*. The use of medicinal plants from the indigenous flora is prevalent for this group as well.

2.7 Application of Medicinal Plants as Food for Domestic Animals and Bee Pasture (Appendix I)

This group includes 11 species (5.70%) of medicinal plants from 11 genera and 8 families. The Law on Medicinal Plants specifies 4 of these species. With respect to their origin, 7 species (63.64%) belong to the indigenous flora, 2 species (18.18%) constitute plants foreign to the Bulgarian flora and 2 species (18.18%) are cultivated as domestic plants. The following species, that are typical locally, have the widest application as food for domestic animals: *Amaranthus sp.*, *Chenopodium album*, *Portulaca oleracea*, *Stellaria media*, *Taraxacum officinale*, *Urtica dioica*. It has become much more common to feed domestic animals using ready-made food products such as factory-manufactured granules. Nevertheless, plants from the indigenous flora are used to a larger extent than foreign or domestic species of medicinal plants. Interestingly, with regard to the Ispirih area, (Kultur, S., Semra S., 2009) report about three species of medicinal plants used as animal food: *Aesculus hippocastanum*, *Cynodon dactylon* and *Zea mays*. The former two species, *Aesculus hippocastanum* and *Cynodon dactylon*, have not been stated as food source for domestic animals in the Beloslav area. The possible reason why *Cynodon dactylon* has not been reported to be used as food for domestic animals in the Beloslav area is because none of the respondents there owns large herbivorous animals or harvesting this plant is more labor-intensive. When conducting the survey, we came across only two persons keeping bees. The medicinal plants used in beekeeping are *Helianthus annuus* and *Robinia pseudoacacia*.

2.8 Application of Medicinal Plants for Decorative Purposes (Appendix I)

There are 43 species (22.28%) of medicinal plants used for decorative purposes which species relate to 36 genera and 24 families. The Law on Medicinal Plants specifies 34 of those species. Regarding their origin, 37 species (80.05%) of medicinal plants grow naturally in the area, 5 species (11.63%) are foreign for the Bulgarian flora and 1 species (2.33%) is grown as a cultivated plant. The following species are used for decoration: *Galanthus nivalis*, *Paeonia peregrina*, *Primula vulgaris*, *Hedera helix*, *Vinca herbacea*, *Vinca minor*.

The high percentage, 80.05%, of local species used is impressive. This is a confirmation of the fact that the locals are well familiar with the plant diversity in the area but on the other hand are not aware of the conservation of plant species since this group includes plants with conservation significance for the flora of Bulgaria such as: *Galanthus nivalis*, *Orchis purpurea*, *Orchis simia*, *Orchis tridentata* (Law on Biodiversity). Medicinal plants are used for decoration in the form of bouquets of cut plants (dried and fresh), or cuttings to plant in flowerpots or gardens.

For reference, the study of the Ispirih area (Kultur, S., Sami, S., 2009) describes 9 species of medicinal plants which are perennial and grown in yards and gardens. The noticeably more marked species diversity with regard to medicinal plants used for decorative purposes in the Beloslav area can be explained with the fact that this study includes not only perennial species but also species that people can collect for the preparation dried or fresh bouquets. Nevertheless, the decorative plants grown in the yards and gardens of the Ezerovo and Kazashko residents

exhibit markedly more diversity. Such plants include *Buxus sempervirens*, *Paeonia peregrina*, *Primula veris*, *P. vulgaris*, *Tagetes erecta*, *Viola tricolor*.

2.9 Application of Medicinal Plants as Dyes (Appendix I)

For dyes, the local inhabitants use 9 species (4.66%) of medicinal plants belonging to 8 genera from 8 families. Five of these species are specified in the Law on Medicinal Plants. With respect to their origin, there are 7 species (87.50%) growing naturally in the area - *Cotinus coggygia*, *Ficus carica*, *Juglans regia*, *Mentha piperita*, *M. Spicata*, *Tilia tomentosa* and *Urtica dioica*; one species (11.11%) is foreign for the flora of Bulgaria - *Ailanthus altissima*; and one species (11.11%) is cultivated as a domestic plant – *Allium cepa*. It is a curious fact, that a foreign species such as *Ailanthus altissima* introduced to Bulgaria at the end of the 19th and beginning of the 20th century (Petrov et al, 2012) became used as a dye, whereas indigenous plants with dyeing properties such as *Galium aparine*, *Fraxinus ornus*, *Ulmus minor* have not been mentioned regarding this application. It has to be noted that this application of medicinal plants for the Beloslav area has remained in the past as few people answered this question, mainly above 60, who explained that they used to dye wool and fabric in their younger years. For reference, it has been stated that in the Eastern Rhodopes area (Kirilova, 2014) the local inhabitants use 28 plants to dye fabric. Of those, 22 are medicinal and have spread naturally within Bulgaria's flora. This considerable difference between the two areas regarding the plants used as dyes reflects the different source of livelihood and the substantial distinctions with respect to the social and economic development of each place. This also means that the still existing local knowledge in the Beloslav area will also be lost with time.

2.10 Application of Medicinal Plants as Pesticides (Appendix I)

Regarding this group, the respondents have pointed out 19 species (9.84%) of medicinal plants from 16 genera and 11 families. The Law on Medicinal Plants specifies 7 species of these. With regard to their origin, the locals use 6 species (31.58%) of medicinal plants that have spread naturally in the area - *Cotinus coggygia*, *Artemisia absinthium*, *Matricaria chamomilla*, *Mentha spicata*, *Origanum vulgare* and *Urtica dioica*. Two species (10.53%) come from another phytogeographical region of Bulgaria - *Geranium macrorrhizum* and *Aesculus hippocastanum*. There are also 7 species (36.84%) that are foreign for the Bulgarian flora - *Tagetes erecta*, *Cupressus sempervirens*, *Ricinus communis*, *Ocimum basilicum*, *Rosmarinus officinalis*, *Laurus nobilis* and *Nicotiana tabacum*, and further 4 species (20.05%) are cultivated as domestic plants - *Allium cepa*, *Allium sativum*, *Brassica oleracea* and *Capsicum annuum*. For this group, it is interesting to note that the prevailing number of species are foreign for Bulgaria or cultivated. A possible explanation for that can be the fact that the residents do not look for herbs specifically with the idea to use them as pesticides but utilize whatever herbs they already have close to hand.

2.11 Application of Medicinal Plants for Cleaning (Appendix I)

For cleaning in the house, the locals use 3 species (1.55%) of medicinal plants belonging to 3 genera from 3 families. Two of those species (66.67%) are foreign for the Bulgarian flora - *Citrus limon* and *Syzygium aromaticum*, while 1 species (33.33%) is typical for the Northern Black Sea coast - *Urtica dioica*. To dust and remove spiderwebs, some of the respondents use *Calamagrostis arundinaceae* (L.) Roth, which species is not a medicinal plant yet its practical application is of interest. Another non-medicinal plant is *Kochia scoparia* (L.) Schrad, used to make brooms to clean outdoor areas.

Overall, few species of medicinal plants are used for house cleaning as the residents prefer ready to use synthetic products for this purpose.

2.12 Application of Medicinal Plants for the Creation of Objects and in Construction (Appendix I)

To create various everyday objects, the respondents in the Beloslav area use 14 (7.25%) species of medicinal plants from 13 genera and 10 families. The Law on Medicinal Plants specifies 8 species of those. According to their origin, 11 species (78.57 %) of medicinal plants are typical of the Northern Black Sea coast - *Clematis vitalba*, *Corylus avellana*, *Fraxinus ornus*, *Juglans regia*, *Morus nigra*. Two species (14.28%) come from another floristic region of Bulgaria - *Morus alba* and *Fagus sylvatica*. One species (7.14%) is cultivated as a domestic plant - *Zea mays*.

The proximity of the Varna – Beloslav lake and the typical vegetation dictates the frequent use of *Phragmites australis* (Cav.) Trin. ex Steud., which species is not a medicinal plant yet has an interesting application in the everyday life. The locals call this grass “karakofa” and use it extensively to plait mats and other objects for the house. Another typical and non-medicinal plant which the locals frequently utilize to make bottoms for barrels is *Typha sp.*

2.13 Application of Medicinal Plants for Heating (Appendix I)

For heating, there are 4 species (2.07%) of medicinal plants used from 2 genera and 2 families. Of those, 3 species (75%) of medicinal plants are typical for the indigenous flora - *Carpinus betulus*, *Quercus cerris*, *Q. pubescens*, and 1 species (25%) is foreign for Bulgaria - *Robinia pseudoacacia*. The survey we conducted revealed that wood for heating is more often used by the village residents.

2.14 Application of Medicinal Plants in Trade (Appendix I)

There is only one species 1 (0.52%) from 1 genus and 1 family used for trade - *Quercus sp.* Only one respondent has indicated to use medicinal plants for trade. The species belongs to the indigenous flora for the Northern Black Sea coast region.

2.15 Application of Medicinal Plants to Forecast the Weather (Appendix I)

To forecast the weather, the respondents have indicated 5 species (2.95%) belonging to 5 genera from 5 families. The Law on Medicinal Plants specifies 2 of these species. Regarding their origin, 3 of these species (60%) are medicinal plants typical for the area - *Salix sp.*, *Syringa vulgaris* и *Malus sylvestris*, There is 1 cultivated species (20%) - *Helianthus annuus* and 1 species (20%) is a medicinal plant foreign for the flora of Bulgaria - *Robinia pseudoacacia*.

In the surveyed area, the knowledge about weather forecasting is related only to the repeated blossoming of some plants. The locals believe that the repeated blossoming heralds a cold winter. No other plant attributes or characteristics that can serve to forecast the weather have been pointed out by the inhabitants of the Beloslav area. This can be compared to a study (Nedelcheva, Dogan, 2011) which reports 30 species of plants in Bulgaria used by the people to forecast the weather based on other features, characteristics or parts of plants, besides the repeated blossoming. The conclusion which can be drawn here is that the residents of the area under investigation have not preserved the knowledge to forecast the weather using the plants in the area. This can be due to globalization and reliance on mass media. Moreover, to some extent people have lost their connection with nature and the knowledge to observe the phenological changes in plants and their significance.

2.16 Application of Medicinal Plants in Folkloric Traditions and Customs (Appendix I)

In the area under investigation, for folkloric traditions and customs the residents use 14 species (7.25%) of medicinal plants from 13 genera and 10 families. The Law on Medicinal Plants specifies 5 indigenous species (35.71%): *Abies alba*, *Cornus mas*, *Geranium macrorrhizum*, *Juglans regia* and *Picea abies*. In terms of their origin, 6 species (42.86%) of medicinal plants are typical for the area: *Abies alba*, *Cornus mas*, *Juglans regia*, *Salix sp.*, *Pinus nigra* and *Vitis vinifera*. Two species (14.28%) come from another floristic region in Bulgaria: *Geranium macrorrhizum* and *Picea abies*. There are 4 species (28.57%) of medicinal plants used in folkloric traditions and customs that are foreign for the Bulgarian flora: *Buxus sempervirens*, *Ocimum basilicum*, *Pelargonium zonale* and *Salix babylonica*. Also, there are four cultivated species (14.28%) finding application in the folkloric traditions and customs - *Zea mays* and *Capsicum annuum*. In this group, the subcategory of plants typical for the Northern Black Sea coast is again the largest (42.86%). On the one hand this means that the local residents keep their traditions, while on the other hand the noticeable size of the subcategory of foreign species introduced to Bulgaria (28.57%) shows that these have been permanently adopted in the folkloric traditions and customs of the local inhabitants.

Conclusion:-

It has been established for the area of the town of Beloslav and the villages of Ezerovo and Kazashko that the local residents use a considerable taxonomic diversity of medicinal plants – 193 species. The surveyed area features 29 species of medicinal plants used by the locals in human medicine which are new in terms of ethnobotany. In all applications of medicinal plants in the everyday life, the locals prefer to use indigenous plant species typical for the Northern Black Sea coast region. This is a proof of the existence of local knowledge regarding the use of medicinal plants in everyday life. On the other hand, some applications such as food for domestic animals, bee pastures, house cleaning, creation of objects, weather forecasting entail fewer species of medicinal plants compared to other areas in Bulgaria. For the Beloslav area, some of these applications have remained in the past. At the same time, the use of plants foreign for Bulgaria's flora demonstrates the impact of globalization and the social and cultural development even in the use nowadays of herbal products.

Appendix I

№	Family	Scientific Name	Bulgarian Name	LM P	O ri gi n	Application
1.	Adoxaceae	Sambucus ebulus L.	Trevist buz	+	1	1,2,5
2.	Adoxaceae	Sambucus nigra L.	Cheren buz, svirchina, svirchovina	+	1	1,5,16
3.	Adoxaceae	Viburnum farinosum Stokes.	Kalina		1	8
4.	Amaranthaceae	Chenopodium album L.	Loboda	+	1	4,7
5.	Amaranthaceae	Amaranthus sp.	Shtir		1	7
6.	Amaranthaceae	Beta vulgaris L.	Tsveklo		4	1,5
7.	Amaranthaceae	Spinacia oleracea L.	Spanak		4	4
8.	Amaryllidaceae	Allium cepa L.	Luk		4	1,3,4,9,10
9.	Amaryllidaceae	Allium porrum L.	Praz		4	1,4
10.	Amaryllidaceae	Allium sativum L.	Chesan		4	1,2,4,10
11.	Amaryllidaceae	Allium ursinum L.	Levurda, leorda	+	2	1,4
12.	Amaryllidaceae	Galanthus nivalis L.	Kokiche	+	1	1,8
13.	Amaryllidaceae	Leucojum aestivum L.	Blatno kokiche		1	1,8
14.	Amaryllidaceae	Nectaroscordum siculum subsp. bulgaricum (Janka) Stearn.	Samardala	+	1	1,4
15.	Anacardiaceae	Cotinus coggygria Scop.	Tetra, Smradlika	+	1	1,2,3,5,9,10
16.	Apiaceae	Levisticum officinale W.D.J.Koch	Devisil, lyushtyan		4	1,4
17.	Apiaceae	Apium graveolens L.	Tselina		4	1,4,6
18.	Apiaceae	Anethum graveolens L.	Kopur	+	1	1,4,6
19.	Apiaceae	Coriandrum sativum L.	Koriandur	++	2	1,4
20.	Apiaceae	Petroselinum crispum(Mill.) Fuss.	Magdanoz		4	1,3,4
21.	Apiaceae	Pimpinella anisum L.	Anason		4	1,4,5
22.	Apiaceae	Foeniculum vulgare Mill.	Rezene	+	1	4
23.	Apiaceae	Daucus carota L.	Morkov		1	1
24.	Apocynaceae	Vinca herbacea Waldst. & Kit.	Trevist zimzelen	+	1	8
25.	Apocynaceae	Vinca minor L.	Dreben zimzelen	+	1	8
26.	Araceae	Arum maculatum L.	Zmiyska hurka	+	1	1
27.	Araliaceae	Hedera helix L.	Brushlyan	+	1	1,8
28.	Asparagaceae	Asparagus officinalis L.	Zaycha syanka	+	1	1,8
29.	Asparagaceae	Convallaria majalis L.	Momina sulza	+	1	8
30.	Asparagaceae	Polygonatum multiflorum (L.) All.	Momkova sulza	+	1	8
31.	Asparagaceae	Scilla bifolia L.	Sinchets	+	1	8
32.	Betulaceae	Carpinus betulus L.	Gabur	+	1	12
33.	Betulaceae	Corylus avellana L.	Leska, leshnik	+	1	1,4,5,12
34.	Brassicaceae	Armoracia rusticana P.Gaertn., B.Mey. & Scherb.	Hryan		4	1,6
35.	Brassicaceae	Brassica nigra (L.) K.Koch.	Cheren sinap	+	1	6
36.	Brassicaceae	Brassica oleracea L.	Zeke		4	1,10
37.	Brassicaceae	Brassica rapa L.	Ryapa		4	1
38.	Brassicaceae	Capsella bursa-pastoris(L.)Medik.	Ovcharska torbichka	+	1	1
39.	Buxaceae	Buxus sempervirens L.	Chimshir		3	8,16
40.	Cannabaceae	Humulus lupulus L.	Hmel		1	1
41.	Caryophyllaceae	Stellaria media (L.) Vill.	Vrabchovi tsrevtsa	+	1	7
42.	Commelinaceae	Callisia fragrans (Lindl.) Woodson.	Kalitsia, kalizia		3	1
43.	Compositae	Achillea millefolium E.Mey.	Byal ravnets	+	1	1

44.	Compositae	Anthemis tinctoria L.	Zhulto područe	+	1	8
45.	Compositae	Artemisia absinthium L.	Byal pelin	+	1	10
46.	Compositae	Artemisia annua Pall.	Sladuk pelin	+	1	5
47.	Compositae	Bellis perennis L.	Parichka	+	1	8
48.	Compositae	Calendula officinalis L.	Neven, zhulta ruzha		3	1,3,8
49.	Compositae	Carduus acanthoides Pall. ex M.Bieb.	Magareshki bodil	+	1	1,5
50.	Compositae	Centaurea cyanus L.	Metlichina	+	1	8
51.	Compositae	Cichorium intybus L.	Sinya zluchka, tsikoria	+	1	1,5
52.	Compositae	Cirsium arvense (L.) Scop.	Palamida		1	1
53.	Compositae	Helianthus annuus L.	Slunchogled		4	1,7,15
54.	Compositae	Helianthus tuberosus L.	Zemna yabulka, gulia, neralma		4	4
55.	Compositae	Inula helenium L.	Byal oman	+	1	8
56.	Compositae	Matricaria chamomilla L.	Layka	+	1	1,2,3,10
57.	Compositae	Senecio vulgaris L.	Obiknoven sporezh	+	1	8
58.	Compositae	Tagetes erecta L.	Kamshitsa		3	18,10
59.	Compositae	Tanacetum balsamita L.	Kaloferche		3	1
60.	Compositae	Taraxacum officinale (L.) Weber ex F.H.Wigg	Gluharche	+	1	1,4,7
61.	Compositae	Tussilago farfara L.	Podbel	+	1	1
62.	Compositae	Xeranthemum annuum L.	Suho tsvete	+	1	8
63.	Cornaceae	Cornus mas L.	Dryan	+	1	1,4,5,16
64.	Crassulaceae	Sedum acre L.	Thustiga	+	1	8
65.	Crassulaceae	Sempervivum sp.	Debela Mara		1	1,8
66.	Cucurbitaceae	Cucumis sativus L.	Krastavitsa		4	3
67.	Cucurbitaceae	Cucurbita sp.	Tikva		4	1,2
68.	Cucurbitaceae	Ecballium elaterium (L.) A.Rich.	Luda krastavitsa	+	1	1
69.	Cupressaceae	Cupressus sempervirens L.	Kiparis		3	10
70.	Ericaceae	Arctostaphylos uva-ursi (L.) Spreng.	Mecho grozde	++	2	1
71.	Ericaceae	Vaccinium vitis-idaea L.	Chervena borovinka	++	2	1
72.	Euphorbiaceae	Ricinus communis L.	Ritsin, kurlezh		3	10
73.	Fagaceae	Fagus sylvatica L.	Buk	+	2	12
74.	Fagaceae	Quercus cerris L.	Tser		1	13
75.	Fagaceae	Quercus pubescens Willd.	Byalo meshe		1	13
76.	Fagaceae	Quercus sp.	Dub		1	5,12,13,14
77.	Geraniaceae	Geranium macrorrhizum L.	Zdravets	++	2	1,10,16
78.	Geraniaceae	Pelargonium roseum Willd.	Indrishe		3	1,5,8
79.	Geraniaceae	Pelargonium zonale (L.) L'Hér. ex Aiton	Mushkato		3	1,8,16
80.	Ginkgoaceae	Ginkgo biloba L.	Ginko		3	1
81.	Grossulariaceae	Ribes nigrum L.	Cheren kasis		4	1,5
82.	Hippocastanaceae	Aesculus hippocastanum L.	Konski kesten	++	2	10
83.	Hypericaceae	Hypericum perforatum L.	Zhult kantaron, kuluchevo, kisi kolu	+	1	1
84.	Iridaceae	Iris pseudacorus L.	Blatna perunika	+	1	8
85.	Juglandaceae	Juglans regia L.	Oreh	+	1	1,3,4,5,9,12,16
86.	Lamiaceae	Agastache rugosa (Fisch. & C.A.Mey.) Kuntze	Agastache		4	1
87.	Lamiaceae	Lavandula angustifolia Mill.	Lavandula		3	1,4,5,7
88.	Lamiaceae	Melissa officinalis L.	Matochina, limonche	+	1	1

89.	Lamiaceae	Mentha piperita L.	Menta		1	1,3,4,5,9
90.	Lamiaceae	Mentha spicata L.	Gyuzum, dzhodzhen, yuzum	+	1	1,4,9,10
91.	Lamiaceae	Ocimum basilicum L.	Bosilek		3	1,4,10,16
92.	Lamiaceae	Origanum vulgare L.	Rigan	+	1	1,4,5,8,10
93.	Lamiaceae	Rosmarinus officinalis L.	Rozmarin		3	1,4,10
94.	Lamiaceae	Salvia officinalis L.	Gradinski chay, salvia	++	2	1
95.	Lamiaceae	Satureja hortensis L.	Chubritsa		3	1,4
96.	Lamiaceae	Sideritis scardica Griseb.	Mursalski chay	++	2	1
97.	Lamiaceae	Thymus sp.	Mashterka	+	1	1,4,5
98.	Lauraceae	Cinnamomum zeylanicum Blume.	Kanela		3	1,4
99.	Lauraceae	Laurus nobilis L.	Dafinov list		3	1,4,10
100.	Leguminosae	Cassia acutifolia Delile.	Maychin list		1	1
101.	Leguminosae	Cicer arietinum L.	Nahut		4	5
102.	Leguminosae	Medicago sativa L.	Lyutserna		1	7
103.	Leguminosae	Robinia pseudoacacia L.	Akatsia, salkum		3	5,7,13,15
104.	Leguminosae	Trigonella caerulea (L.) Ser.	Sminduh	+	1	1,4
105.	Linaceae	Linum usitatissimum C.M. Rogers	Len		1	1
106.	Malvaceae	Alcea rosea L.	Ruzha	+	1	8
107.	Malvaceae	Malva sylvestris	Kambulesh	+	1	1
108.	Malvaceae	Theobroma cacao L.	Kakao		3	5
109.	Malvaceae	Tilia tomentosa Moench.	Lipa	+	1	1,5,9,12
110.	Moraceae	Ficus carica L.	Smokinya	+	1	1,4,6,9
111.	Moraceae	Morus alba L.	Byala chernitsa		1	4,12
112.	Moraceae	Morus nigra L.	Cherna chernitsa		2	4,5,6,12
113.	Myristicaceae	Myristica fragrans Houtt.	Indiysko orehche		3	1,4
114.	Myrtaceae	Syzygium aromaticum (L.) Merr.&Perry LPerry	Karamfil		3	1,4,11
115.	Orchidaceae	Orchis purpurea Huds.	Purpuren salep	+	1	8
116.	Orchidaceae	Orchis simia Lam.	Maymunski salep	+	1	8
117.	Orchidaceae	Orchis tridentata Muhl. ex Willd.	Trizubest salep	+	1	8
118.	Oleaceae	Fraxinus ornus L.	Osen, muzhdryan	+	1	12
119.	Oleaceae	Ligustrum vulgare L.	Ptiche grozde	+	1	8
120.	Oleaceae	Olea europaea L.	Maslina		3	1,3
121.	Oleaceae	Syringa vulgaris L.	Lyulyak	+	1	8,15
122.	Paeoniaceae	Paeonia peregrina Mill.	Bozhur	+	1	8
123.	Papaveraceae	Chelidonium majus L.	Zmiysko mlyako	+	1	1,3
124.	Papaveraceae	Papaver rhoeas L.	Mak	+	1	8
125.	Papaveraceae	Papaver somniferum L.	Gradinski mak		3	4,8
126.	Phytolaccaceae	Phytolacca americana L.	Vinoboy	+	1	8
127.	Pedaliaceae	Sesamum indicum L.	Susam		3	4
128.	Pinaceae	Abies alba L.	Ela	+	1	16
129.	Pinaceae	Picea abies (L.) H.Karst.	Smurch	++	2	16
130.	Pinaceae	Pinus nigra J.F.Arnold.	Bor		1	3,12,16
131.	Piperaceae	Piper nigrum L.	Cheren piper		3	4,6
132.	Plantaginaceae	Plantago lanceolata L.	Tesnolist zhivovlyak, zhilovnik	+	1	1
133.	Plantaginaceae	Plantago major L.	Shirokolist zhivovlyak	+	1	1
134.	Plumbaginaceae	Plumbago europaea L.	Sarkofay	+	1	8
135.	Poaceae	Oryza sativa L.	Oriz		3	1
136.	Poaceae	Avena sativa L.	Oves		4	7

137.	Poaceae	Secale cereale L.	Ruzh		4	5
138.	Poaceae	Zea mays Mill.	Tsarevitsa		4	1,6,12,16
139.	Polygonaceae	Rumex acetosa L.	Kiseletz	+	1	4
140.	Polygonaceae	Rumex patientia L.	Lapad	+	1	4
141.	Portulacaceae	Portulaca oleracea L.	Tuchenitsa, svinski shtir	+	1	4,7
142.	Primulaceae	Primula veris L.	Iglik	+	1	8
143.	Primulaceae	Primula vulgaris Huds.	Iglik	+	1	8
144.	Ranunculaceae	Clematis vitalba L.	Lozina, povet	+	1	12
145.	Ranunculaceae	Nigella damascena L.	Chelebitka	+	1	8
146.	Ranunculaceae	Ranunculus ficaria L.	Zhulturche	+	1	8
147.	Rhamnaceae	Paliurus spina-christi L.	Draka	+	1	1
148.	Rhamnaceae	Ziziphus jujuba Mill.	Hinap, finap		3	4
149.	Rosaceae	Agrimonia eupatoria L.	Kamshik	+	1	1
150.	Rosaceae	Amygdalus communis L.	Badem		4	3,4,5
151.	Rosaceae	Aronia arbutifolia (L.) Elliott.	Aronia		4	5
152.	Rosaceae	Cerasus vulgaris Mill.	Vishna		1	5,6
153.	Rosaceae	Crataegus monogyna Jacq.	Glog	+	1	1,4,5
154.	Rosaceae	Crataegus pentagyna Waldst.&Kit exWilld.	Cheren glog	+	1	1
155.	Rosaceae	Cydonia oblonga Mill.	Dyulya		4	5,6
156.	Rosaceae	Fragaria vesca L.	Diva yagoda	+	1	4
157.	Rosaceae	Malus sylvestris (L.) Mill.	Diva yabulka, kiselitsa	+	1	4,15
158.	Rosaceae	Mespilus germanica L.	Mushmula		1	4
159.	Rosaceae	Potentilla reptans Georgi.	Ochibolets	+	1	1
160.	Rosaceae	Prunus avium (L.) L.	Cheresha		4	1
161.	Rosaceae	Prunus cerasifera Ehrh.	Dzhanka		1	4,5
162.	Rosaceae	Prunus spinosa L.	Trunka, trunkoslivka	+	1	1,5
163.	Rosaceae	Pyrus communis Thunb.	Diva krusha		1	4,5,6
164.	Rosaceae	Rosa canina L.	Shipka, shtipni dupe		1	1,4
165.	Rosaceae	Rosa damascena Herrm.	Roza		4	1,5,8
166.	Rosaceae	Rubus sp.	Kupina		1	1,4,5
167.	Rosaceae	Sorbus domestica L.	Skorusha, oskrusha	+	1	1,4
168.	Rubiaceae	Coffea arabica R.	Kafe		3	5,10
169.	Rubiaceae	Galium aparine L.	Lepka	+	1	1
170.	Rubiaceae	Galium verum L.	Enyovche	+	1	1
171.	Rutaceae	Citrus limon (L.) Osbeck	Limon		3	1,3,5,11
172.	Salicaceae	Populus sp.	Topola		1	12
173.	Salicaceae	Salix babylonica L.	Plachushta vurma		3	16
174.	Salicaceae	Salix purpurea L.	Rakita	+	1	12
175.	Salicaceae	Salix sp.	Vurma		1	15,16
176.	Sapindaceae	Acer tataricum L.	Mekisch	+	1	12
177.	Simaroubaceae	Ailanthus altissima (Mill.) Swingle	Div oreh		3	9
178.	Solanaceae	Atropa belladonna L.	Bela dona	+	2	1
179.	Solanaceae	Capsicum annuum L.	Chushka		4	10,16
180.	Solanaceae	Lycium barbarum L.	Merdzhan, zhiv plet		3	1
181.	Solanaceae	Nicotiana tabacum L.	Tyutyun		3	10
182.	Solanaceae	Physalis alkekengi L.	Fizalis, mehunka	+	1	4,8
183.	Solanaceae	Solanum lycopersicum L.	Domat		4	1,3
184.	Theaceae	Camellia sinensis (L.) Kuntze.	Zelench chay		3	1
185.	Urticaceae	Urtica dioica L.	Kopriva		1	1,3,4,7,9,10, 11

186.	Violaceae	Viola odorata L.	Temenuga	+	1	8
187.	Violaceae	Viola tricolor L.	Tritsvetna temenuga	+	1	8
188.	Vitaceae	Vitis vinifera L.	Loza		4	4,5,6,16
189.	Xanthorrhoeaceae	Aloe vera (L.) Burm	Aloe		3	1,3,8
190.	Zingiberaceae	Curcuma longa L.	Kurkuma		3	1,4
191.	Zingiberaceae	Elettaria cardamomum (L.) Maton.	Kardoamon		3	4
192.	Zingiberaceae	Zingiber officinale Roscoe.	Dzhindzhifil		3	1,4
193.	Zygophyllaceae	Tribulus terrestris L.	Babini zubi	+	1	1

Explanatory notes

LMP – the Law on Medicinal Plants

+ - A plant of the indigenous flora, specified in the Law on Medicinal Plants

++ - A plant of the flora of Bulgaria specified in the Law on Medicinal Plants

1- A plant of the indigenous flora

2- A plant of the flora of Bulgaria

3- A plant foreign for Bulgaria

4- A cultivated plant

Application:-

- 1 Application of medicinal plants in human medicine
- 2 Application of medicinal plants in veterinary medicine
- 3 Application of medicinal plants for cosmetic purposes
- 4 Application of medicinal plants as food and condiments
- 5 Application of medicinal plants as beverages, beverage flavorings and colorants
- 6 Application of medicinal plants as preservatives
- 7 Application of medicinal plants as food for domestic animals and bee pasture
- 8 Application of medicinal plants for decorative purposes
- 9 Application of medicinal plants as dyes
- 10 Application of medicinal plants as pesticides
- 11 Application of medicinal plants for house cleaning
- 12 Creation of objects / Construction
- 13 Application of medicinal plants for heating
- 14 Application of medicinal plants in trade
- 15 Application of medicinal plants to forecast the weather
- 16 Application of medicinal plants in folkloric traditions and customs

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