

ETHNOBOTANICAL STUDY OF MEDICINAL PLANTS FOR  
CULINARY PURPOSES IN THE NORTH BLACK SEA COAST,  
VARNA REGION (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 74 people from 2 communities – Aksakovo and Topoli (Varna region). 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.

## INTRODUCTION

The use of medicinal plants was long known to the Bulgarians. Medicinal plants were used in a variety of ways in people's lives and have been a primary remedy (Nedelcheva, 2009; Nedelcheva, 2012). In the past, the main diet of the local population on our lands consisted of plant food. Knowing the qualities of plants and passing on this knowledge has largely determined people's lives. In the modern world, much of this knowledge is lost. Globalization imposes new models of living and livelihood. With time, the meaning of the concept evolved and improved. Nowadays, ethnobotany is defined as the study of the relationship between plants and people, most often focusing on the local habitats of plants and the different applications plants have in human life (McClatchey, 2009). Ethnobotanical research on the uses of medicinal plants for culinary purposes by the local population provides information that describes and preserves this knowledge.

Many contemporary publications include data about the application of medicinal plants such as "Wild Useful Plants in Bulgaria" (Stojanov, Kitanov, 1960), for example for culinary purposes (Tcheshmedjiev et al, 1999), 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), and ethnobotanical study for wild edible plants (Nedelcheva, 2013).

Bulgaria is rich in diverse natural resources and cultural traditions. As per the latest data 4 102 species of vascular plants were found in Bulgaria (Asyov et al., 2012). The total number of species of medicinal plants in Bulgaria is 842 belonging to 444 genera and 118 families. Of those, 730 genera of spontaneously spreading vascular plants were included in the Law on Medicinal Plants (2000). The remaining 114 genera also exhibit spontaneous spreading and are described in the literature on medicinal plants in Bulgaria (Zahariev, 2015).

The wealth of plant resources is impressive also at regional level. For comparison, only in the phytogeographical region of Northeastern Bulgaria, there are 600 species of medicinal plants (Zahariev, Ivanov, 2014). In the floristic sub-region of the Northern Black Sea coast the number of medicinal plants is 593. On the territory of the Franga plateau, a portion of which forms part of the studied area, there are 362 species of medicinal plants (Zahariev, Kacheva, 2015).

Despite such a wealth of medicinal plants, the Northern Black Sea coast region has remained unstudied in terms of ethnobotany. The aim of the present study was to investigate the use of wild medicinal plants for culinary purposes in the towns of Aksakovo and Topoli (Varna region). It is a part of a broader ethnobotanical investigation of the medicinal plants in the Northern Black Sea coast region.

## MATERIALS AND METHODS

The survey was conducted in the period June - July 2017. It was carried out in two non-residential areas - Aksakovo (43.25 ° N, 27.82 ° E) and Topoli village (43.21 ° N, 27.83 ° E) Varna (Figure 1).

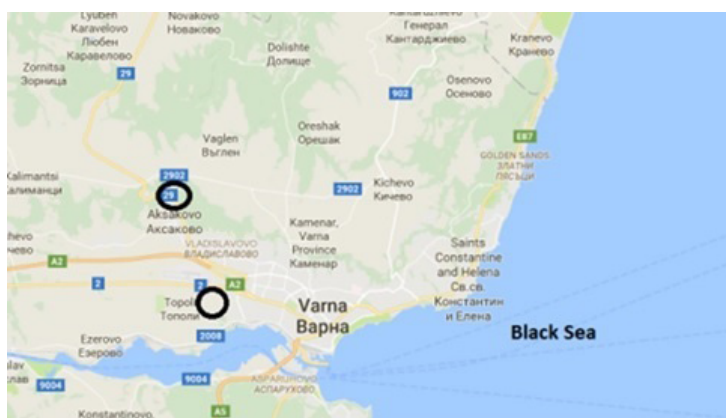


Fig. 1. Map of the study area.

The map of the floristic regions in Bulgaria (Jordanov, 1966) was used to define the boundaries of the North Black Sea coast. The survey was conducted using the survey method. An interview with the local population was based on previously developed original questionnaires. A total of 74 people were interviewed. Participants in the polls were randomly selected. They were from different age groups, ethnic groups, sex and education. The study covered the collection of data on the use of medicinal herbs for culinary purposes. The taxonomic status and the name of the taxa were adopted according to the International Plant Names Index (International Nomenclature Index) Species and used “Identifier of Plants in Bulgaria” (Delipavlov et al., 2011).

## RESULTS AND DISCUSSION

### Demographic characteristics of the population surveyed.

Distribution of respondents by ethnicity. Since the surveys were conducted in settlements with predominantly Bulgarian population, ethnicities such as Roma were less presented. The ratio of ethnicity was as follows: Bulgarians - 65 people (87.84%), copanari - 8 people (10.81%), roma - 1 person (1.35%) (Table 1).

Distribution of respondents by age

**Table 1.** Age composition of the respondent group

Age Group	10_20	21_30	31_40	41_50	51_60	61_70	71_80	80 >
Number (%) of respondents	2 (2,70%)	4 (5,41%)	10 (13,51%)	11 (14,86%)	23 (31,08%)	15 (20,27%)	7 (9,46%)	2 (2,70%)

Distribution of respondents by education. Elementary education - 1 (1.35%), primary education - 22 (29.73%), secondary education - 38 (51.35%) and higher education - 12 (16,22%) people.

Distribution of respondents by sex.

We surveyed 19 (26.78%) men and 55 (74.32%) women. The more active participation of women was due to the fact that men more often refuse to cooperate in conducting a survey

Allocation of jobseekers.

According to the employment factor, we received the following results: students - 2 people (2.70%), working - 47 people (63.51%), unemployed - 2 people (2.70%) and retired - 23 people (31.08%) .

Distribution of respondents by place of residence.

We surveyed 45 (60.81%) people from Aksakovo and 29 (39.19%) from village of Topoli.

From the survey we found that in the two settlements Aksakovo and Topoli are used for culinary purposes 74 types medicinal plants from 62 families to 25 families. Most types of healing plants were from the Rosaceae (15 species),

Compositae (7 species) and Lamiaceae (7 species) families. The use of medicinal plants for food is predominant.

### **Medicinal Plants For Food**

The local population uses 34 types of medicinal plants from 27 genera of 16 families for food, of which dominant are Rosaceae - 12 species, followed by Amaranthaceae - 3 species (Table 2).

To the question: "Which medicinal plants do you use for food"? - 70 people said they were using and 4 people said they did not use such plants for food.

During the survey, the following questions were asked:

"Where do you get the herb?" Out of a total of 371 responses (one respondent uses several medicinal plants) the following results were obtained:

Grow herb	113 (30.46%)
Gather herbs	225 (60.65%)
Buy herbs	32 (8.63%)
Buy a finished product	1 (0.27%)

A curious fact is that the majority of medicinal herbs for food are collected from nature (60.65%). This is an example of a local relationship with nature. On the other hand, this fact is also indicative of a poorly developed economy. If people are busy, they will find it harder to take the time to collect the plants themselves and prepare food with them.

A significant proportion of medicinal plants are grown as crop plants (30.46%). This is related to the practicality of the people - healing plants are therefore easily accessible and always available. Another benefit of cultivation is that this preserves the natural populations of medicinal plants. Unfortunately, this is not a motive for the cultivation of medicinal plants.

When conducting the surveys, we found that medicinal plants were collected more often by residents in the villages, mostly from women. Residents of cities, as well as younger people prefer to buy medicinal plants or finished products.

An interesting fact is that the use of *Urtica dioica* as a food among the local population is extremely well presented. Most often used fresh to prepare soups and dishes in the spring season. Most often it is used fresh to prepare soups and dishes in the spring season. Not rarely it is kept frozen or dried for use in winter.

Some more interesting or little - used plants are the use of *Medicago sativa*. One person replied that he was using fresh alfalfa for salad. Also interesting is the use of *Anthriscus cerefolium* by the local population - copanari. They make fresh salads and use it preserved like pickles. One person replied that he was using *Fagus silvatica* seeds for food.

*Amaranthus* sp. and *Chenopodium alba* are commonly used to prepare dishes by poorer or older people who have kept their knowledge of their use. A curious fact is the tendency towards a healthy diet in some younger people who return to the "forgotten old" by using exactly such wild herbs such as: *Portulaca oleracea*, *Taraxacum officinale*, *Amaranthus* sp. and *Chenopodium alba*.

### **Medicinal Plants Used as Spice (Annex I)**

As a spice, the local population uses 22 types of medicinal plants from 18 genera to 8 families (Table 2). The most used healing plants for spices are the Lamiaceae family - 6 species, Apiaceae - 5 species, Amaryllidaceae - 5 species.

71 people answered that they use medicinal plants as a spice and three people did not use it. On the question: "Where do you get the herb?" of the 437 responses, the following results were obtained:

Guest herb - 299 (66.42%)

Gather herb - 55 (12.59%)

Buy herb - 83 (18.99%)

The higher percentage (66.42%) of people responding to "spice" is due to the fact that the most widely used and traditional spices are grown, such as: *Anethum graveolens*, *Satureja hortensis*, *Mentha spicata*, *Petroselinum crispum*. Not the small percentage (18.99%) of the replies "I buy a herbage" were mainly derived from answers for the use of plants, not native to Bulgaria: *Laurus nobilis*, *Syzygium aromaticum*, *Piper nigrum*, *Zingiber officinale*. The widespread use of *Nectaroscordum siculum* is noticeable. The samarad is used fresh or dried as one of the main ingredients of "colorful salt".

### **Medicinal plants used as beverages (Annex I)**

For the preparation of beverages, the local population uses 15 species of medicinal plants from 13 genera and 8 families (Table 2). The most commonly used plants for the preparation of beverages are from the Rosaceae - 5 species and Compositae - 3 species. When conducting the survey, 42 people answered that they use medicinal plants to prepare different beverages.

"Where do you get the herb?" Of the 76 answers, the following results were obtained:

-Guest herb - 12 (15.78%)

- Gather herb - 57 (75%)

- Buy a herb - 5 (6.58%)

- Buy a finished product - 2 (2.63%)

Here too, the majority of herbs are collected by nature (75%). This is due to the fact that the main use of plants for the preparation of beverages are wild plants such as *Sambucus ebulus*, *Sambucus nigra*, *Cardus acanthoides*. Cultural herb plants were relatively less represented here (12%), perhaps because people use them for other uses and less often for making beverages. In this group the most widespread was the use of *Sambucus nigra* juice

### **Medicinal plants used as a flavoring for beverages**

As a beverage flavor, the local population uses healing plants presented by 11 species from 9 families to 6 families. The most commonly used are plants, representatives of families Lamiaceae - 4 species, Compositae - 2 species and Rosaceae - 2 species (Table 2). Of the respondents, 57 responded to using medicinal plants for a flavor of a drink. On the question "Where do you get the herb?" out of the 75 responses, the following results were obtained:

Grow a herb - 45 (60%)

Gather herb - 16 (21.33%)

Buy a herb - 14 (18.67%)

In this category, the highest percentage (45%) of respondents were growing the herb. This is due to the answer that the most commonly used aromatic plant is *Petroselinum crispum* and *Mentha* sp. Not a small part, 16 people (21.33%) collect a herb, these being predominantly the representatives of the genus *Artemisia*,

which are used to flavor wines. Barrels for wine making use *Artemisia*, *Melissa*, *Thymus*, *Cydonia* and *Malus*. The answers of the respondents "I buy a herbage" (18.67%) are mainly due to the use of non Bulgarian plants such as *Zingiber officinale* and *Citrus limon*.

### **Medicinal plants used as a coloring agent for beverages**

For the coloring of drinks the respondents of the local population uses 12 species, referring to 11 genera of 10 families. The most commonly used medicinal plants for coloring a drink are representatives of the families Adoxaceae - 2 species and Compositae - 2 species. Of the respondents, 53 responded to using medicinal plants as a coloring drink. On the question "Where do you get the herb?" from the 72 responses, the following results were obtained:

- Grow a herb - 32 (44.44%)
- Gather a herb - 33 (45.83)
- Buy a herb - 5 (6.94%)
- Buy a finished product - 2 (2.78)

In this category, the highest percentage (45.83%) of people responded that they were collecting an herb, followed by the responses "Growing Herb" (44.44%) This is due to the fact that the most common is the use of wood of *Morus nigra* and *Quercus* sp, which is used for the coloring of spirits. Less often, the fruits of *Sambucus ebulus* and *Sambucus nigra*, which are also collected by nature, are used less frequently.

### **Medicinal plants used as preservatives**

For food preservation in the studied area, we found that natives used 15 species of medicinal plants from 13 genera to 8 families (Table 2). The largest application as a preservative are the medicinal plants of the Apiaceae family - 3 species and Brassicaceae - 3 species. Of the respondents, 60 responded to using medicinal plants as a preservative for pickles. Where do you get the herb?" Of the 163 responses, the following results were obtained:

- Grow herb - 61 (37.42%)
- Gather herb - 8 (4.91%)
- Buy a herb - 94 (57.67%)

An interesting fact for this group is the high percentage (57.67%) of people responding to buy a herb. This is due to the fact that *Brassica nigra* seeds, also *Citrus limon* and *Zingiber officinale*, are widely used with which people are supplied through the market. Cultivated medicinal plants (37.42%), used as a preservative, also occupy a significant share. Their representatives are: *Zea mays*, *Vitis vinifera*, *Apium graveolens*, *Armoracia rusticana*.

## **CONCLUSION**

The local population in Aksakovo and the village of Topoli (Varna district) uses a significant amount of medicinal plants for culinary purposes - 74 species. Most plant species are used for food.

From a total of 1194 responses to how the medicinal plants were prepared for culinary purposes, the following responses were obtained: 562 (47.06%) raised herb, 394 (33%) collected a herb from nature were herbs, 233 (19.54%)

purchased herb 5 (0.42%) response is buying a finished product. The results obtained show that the local population largely cultivates or collects the plants it uses for culinary purposes. On the one hand, this speaks of a poorly developed economic area, despite the proximity to Varna, and on the other hand, people get clean and high quality food.

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(Annex I)

Table 2 Legend: 1 – Food; 2 – Food spice; 3 – Drink; 4 – A flavor for a drink; 5 – Coloring drink; 6 – Preservative for pickles.

№	Family	Taxa	Vernacular name	Used part	1	2	3	4	5	6
1.	Adoxaceae	<i>Sambucus ebulus</i> L.	Trevist buz	Fruit			+		+	
2.	Adoxaceae	<i>Sambucus nigra</i> L.	Cheren buz, svirchina	Flower, fruit			+		+	
3.	Amaryllidaceae	<i>Allium cepa</i> L.	Luk	Bulb, leaf	+	+				
4.	Amaryllidaceae	<i>Allium sativum</i> L.	Chesan	Bulb, leaf	+	+				
5.	Amaryllidaceae	<i>Allium schoenoprasum</i> L.	Div luk	Leaf		+				
6.	Amaryllidaceae	<i>Allium ursinum</i> L.	Levurda	Leaf	+	+				
7.	Amaryllidaceae	<i>Nectaroscordum siculum subsp. bulgaricum</i> (Janka.)Stearn	Samardala	Leaf		+				
8.	Amaranthaceae	<i>Amaranthus sp.</i>	Shtir	Leaf	+					
9.	Amaranthaceae	<i>Beta vulgaris</i> L.	Cherveno cveklo	Root crops	+				+	
10.	Amaranthaceae	<i>Spinacia oleracea</i> L.	Spanak	Leaf	+					
11.	Anacardiaceae	<i>Cotinus coggygria</i> Scop.	Tetra, Smradlika	Twig					+	
12.	Apiaceae	<i>Apium graveolens</i> L.	Celina	Leaf, root crops		+				+
13.	Apiaceae	<i>Anethum graveolens</i> L.	Kopur	Leaf, seed		+				+
14.	Apiaceae	<i>Anthriscus cerefolium</i> (L.) Hoffm.	Manguna	Shoot	+					
15.	Apiaceae	<i>Foeniculum vulgare</i> Mill	Rezene	Leaf, seed		+				
16.	Apiaceae	<i>Cuminum cyminum</i> L.	Kimion	Seed		+				
17.	Apiaceae	<i>Levisticum officinale</i> W.D.J.Koch	Lushtyan	Leaf		+				+



No	Family	Taxa	Vernacular name	Used part	1	2	3	4	5	6
18.	Apiaceae	<i>Petroselinum crispum</i> (Mill) Fuss.	Magdanoz	Leaf		+				
19.	Betulaceae	<i>Corylus avellana</i> L.	Leska	Seed, wood	+				+	
20.	Brassicaceae	<i>Armoracia rusticana</i> P.Gaertn., B.Mey. & Scherb.	Hryan	Root crops						+
21.	Brassicaceae	<i>Brassica nigra</i> L.	Sinap	Seed	+					+
22.	Compositae	<i>Artemisia absinthium</i> L.	Byal pelin	Shoot				+		
23.	Compositae	<i>Artemisia annua</i> Pall.	Sladuk pelin	Shoot				+		
24.	Compositae	<i>Cardus acanthoides</i> Pall. Ex M.Bieb.	Magareshki bodil	Flower			+			
25.	Compositae	<i>Cichorium intybus</i> L.	Cikoriya	Root, shoot			+			
26.	Compositae	<i>Taraxacum officinale</i> (L.)Weber ex F.H.Wigg	Gluharche	Leaf	+					
27.	Compositae	<i>Helianthus annuus</i> L.	Slunchogled	Seed	+					
28.	Cornaceae	<i>Cornus mas</i> L.	Dryan	Fruit, wood	+					+
29.	Ericaceae	<i>Vaccinium myrtillus</i> L.	Cherna borovinka	Fruit	+					
30.	Fagaceae	<i>Fagus silvatica</i> L.	Buk	Seed	+					
31.	Fagaceae	<i>Quercus</i> sp.	Dub	Wood						+
32.	Geraniaceae	<i>Pelargonium roseum</i> Willd.	Indrishe	Leaf				+		
33.	Juglandaceae	<i>Juglans regia</i> L.	Oreh	Fruit	+	+				+
34.	Lamiaceae	<i>Melissa officinalis</i> L.	Matochina, limonche	Shoot				+		



№	Family	Taxa	Vernacular name	Used part	1	2	3	4	5	6
35.	Lamiaceae	<i>Mentha piperita</i> L.	Menta	Shoot		+		+		
36.	Lamiaceae	<i>Mentha spicata</i> L.	Gyuzum, dzhodzhen, yuzum	Shoot		+		+		
37.	Lamiaceae	<i>Ocimum basilicum</i> L.	Bosilek	Leaf, shoot		+		+		
38.	Lamiaceae	<i>Origanum vulgare</i> L.	Rigan	Shoot		+		+		
39.	Lamiaceae	<i>Satureja hortensis</i> L.	Chubrica	Shoot		+				
40.	Lamiaceae	<i>Thymus sp.</i>	Mashterka	Shoot		+		+		
41.	Lauraceae	<i>Laurus nobilis</i> L.	Dafinov list	Leaf		+				
42.	Leguminosae	<i>Cicer arietinum</i> L.	Nahut	Seed				+		
43.	Leguminosae	<i>Medicago sativa</i> L.	Lucerna	Leaf	+					
44.	Leguminosae	<i>Robinia pseudoacacia</i> L.	Salkum	Flower, wood				+		+
45.	Leguminosae	<i>Trigonella caerulea</i> (L.)Ser.	Sminduh	Shoot, seed		+				
46.	Malvaceae	<i>Tilia tomentosa</i> Moench.	Lipa	Flower						+
47.	Moraceae	<i>Ficus carica</i> L.	Smokinya	Fruit, leaf	+					
48.	Moraceae	<i>Morus nigra</i> L.	Chemica	Fruit, leaf	+					+
49.	Myrtaceae	<i>Syzygium aromaticum</i> (L.) Merr. & L.M.Perry	Karamfil	Flower		+				
50.	Piperaceae	<i>Piper nigrum</i> L.	Cheren piper	Seed		+				
51.	Poaceae	<i>Zea mays</i> Mill.	Carevica	Fruit						
52.	Polygonaceae	<i>Rumex acetosa</i> L.	Kiseec	Leaf	+					
53.	Polygonaceae	<i>Rumex patientia</i> L.	Lapad	Leaf	+					

№	Family	Taxa	Vernacular name	Used part	1	2	3	4	5	6
54.	Portulacaceae	<i>Portulaca oleracea</i> L.	Tuchenica	Shoot	+					
55.	Rosaceae	<i>Aronia arbutifolia</i> (L.) Pers.	Aroniya	Fruit	+		+			
56.	Rosaceae	<i>Crataegus monogyna</i> Jacq	Glog	Fruit			+			
57.	Rosaceae	<i>Fragaria vesca</i> L.	Diva yagoda	Fruit	+					
58.	Rosaceae	<i>Malus sylvestris</i> (L.) Mill.	Diva yabulka	Fruit, wood	+			+	+	
59.	Rosaceae	<i>Mespilus germanica</i> L.	Mushmula	Fruit	+					
60.	Rosaceae	<i>Prunus amygdalus</i> Stokes	Badem	Fruit	+					
61.	Rosaceae	<i>Prunus armeniaca</i> L.	Kaysiya	Fruit, seed	+					
62.	Rosaceae	<i>Prunus avium</i> (L.) L.	Cherasha	Fruit, leaf	+					+
63.	Rosaceae	<i>Prunus cerasifera</i> Ehrh.	Dzhanka	Fruit, wood	+		+		+	
64.	Rosaceae	<i>Prunus spinosa</i> L.	Trunka	Fruit,	+					
65.	Rosaceae	<i>Pyrus communis</i> Thunb.	Diva krusha	Fruit,	+					+
66.	Rosaceae	<i>Rosa canina</i> L.	Shipka	Fruit,	+		+			
67.	Rosaceae	<i>Rosa damascena</i> Herrm.	Maslodayna roza	Flower			+			
68.	Rosaceae	<i>Rubus sp.</i>	Kupina	Fruit	+		+			
69.	Rosaceae	<i>Sorbus domestica</i> L.	Skorusha	Fruit	+					
70.	Rutaceae	<i>Citrus limon</i> (L.) Osbeck.	Limon	Fruit				+		
71.	Urticaceae	<i>Urtica dioica</i> L.	Kopriva	Leaf, shoot	+					
72.	Vitaceae	<i>Vitis vinifera</i> L.	Loza	Fruit, leaf, twig	+		+			+
73.	Zingiberaceae	<i>Curcuma longa</i> L.	Kurkuma	Root		+				
74.	Zingiberaceae	<i>Zingiber officinale</i> Roscoe.	Dzhindzhifil	Root		+	+			+

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