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Use Of Medicinal Plants In The Veterinary Medicine In The Northern Black Sea Coast Region (Bulgaria) - Ethnobotanical Research.

Petya Boycheva¹, and Dimcho Zahariev^{2*}.

¹Medical University, Prof. D-r Paraskev Stoyanov – Varna, Faculty of Pharmacy, Department of Biology, 84 Tsar Osvoboditel Blvd., 9000 Varna, Bulgaria.

²University of Shumen “Episkop Konstantin Preslavski”, Faculty of Natural Sciences, 115 Universitetska Str., 9712 Shumen, Bulgaria.

ABSTRACT

The purpose of this study is to investigate the use of medicinal plants in veterinary medicine by the local population along the Northern Black Sea coast. This is the first ethno-veterinary medical study in Bulgaria. The survey was conducted in the period from June 2014 to October 2017. Interviews with the local population were conducted using original questionnaires prepared upfront. 709 local residents from 32 communities were interviewed. Respondents were selected randomly. They belong to different age, gender, ethnicity, educational and employment groups. As a result of the research, we found that the residents of the studied region use a total of 46 species of medicinal plants from 40 genera from 28 families for treatment and prophylaxis in veterinary medicine. These include local region species, as well as species from other parts of the country; there are also foreign species and a number of cultivated plants. The results of the research demonstrate that knowledge about the use of medicinal plants in veterinary medicine among the people living along the Northern Black Sea coast region is still preserved.

Keywords: medicinal plants, veterinary medicine, Northern Black Sea Coast.

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**Corresponding author*

INTRODUCTION

Bulgaria, as part of Southeast Europe and the Balkans, is an important source of information on the use of plants by the local population. Contemporary ethnobotanical research from the territory of the country is presented in a number of publications [1, 2, 3, 4, 5, 6] and affect different areas of application in the lives of local residents [7, 8, 9, 10, 11].

For the region of the North Black Sea coast there are detailed studies of flora and vegetation [12, 13, 14, 15, 16] but the area has not yet been studied ethnobotanically. This fact makes it extremely important to conduct such research, using the local population as a source of information.

Medicinal plants used in veterinary medicine in Bulgaria have been used since ancient times [17]. Saint John of Rila provided one of the first written resources of medicinal plants usage in veterinary medicine in Bulgaria; in his work he describes two herbal recipes for horse treatment [3]. Some publications from the late 19th and early 20th centuries contain information on the use of medicinal plants in veterinary medicine [18, 19]. Some publications on medicinal herbs used in human medicine also contain information on their usage with animals [20, 21, 22, 23, 24, 25, 26]. Despite the knowledge of the local population about the use of medicinal plants in veterinary medicine, there are still no ethnobotanical studies in this direction in Bulgaria.

The purpose of this study is to investigate the use of medicinal plants in veterinary medicine by the local population along the Northern Black Sea coast. The present study is part of a larger ethnobotanical study on the use of medicinal plants by locals on the North Black Sea coast.

MATERIALS AND METHODS

This study is part of a larger ethnobotanical study of Northern Black Sea. The survey was conducted in the period from June 2014 to October 2017. It was carried out in 32 communities, including 8 towns and 24 villages:

Towns: Varna, Beloslav, Kavarna, Shabla, Aksakovo, Byala, Balchik, and Obzor.

Villages: Bozhurets, Bulgarevo, Vaklino, Gorun, Durankulak, Ezeretz, Kamen bryag, Kichevo, Krapetz, Kumanovo, Poruchik Chunchevo, Sveti Nikola, Topola, Tyulenovo, Hadzhi Dimitur, Ezerovo, Kazashko, Osenovo, Bliznatzi, Kamenar, Kranevo, Shkorpilovtzi, Goritza, and Topoli (Figure 1).



Figure 1: Map of the geographical location of the area under investigation (the borders are marked in red)

The map of the floristic regions in Bulgaria [27] is used to define the boundaries of Northern Black Sea coast. The study was carried out on the basis of the survey methodology. Interviews with the local population were conducted using original questionnaires prepared upfront. A total of 709 people were interviewed: 538 town residents and 171 villagers. Participants in the polls were randomly selected. They are from different age, ethnicity, gender, educational and employment groups. The study encompasses the collection of data on the different uses of medicinal plants in people's lifestyle. An informative collection on folk names of plants is generated. The taxonomic status and the name of the taxa are adopted according to the International Plant Names Index [28]. To determine the species we used Handbook for plants in Bulgaria [29].

The following statistical methods were used to process the obtained results:

- Correlation analysis to assess the correlation between the indicators tested (Pearson coefficient for quantitative indicators and Spearman coefficient for qualitative indicators);
- Student's t-curve in testing hypotheses for a statistically significant difference between two independent samples;
- Nonparametric analysis to verify hypotheses in abnormally distributed and qualitative quantities: Pearson's coefficient on multiple tables; Concentration coefficient (C) for nominal scales, Spearman coefficient (Sr) for ordinal scales and Pearson coefficient (r) for interval scales were used to measure the strength of correlation.

For a null hypothesis significance level, $P < 0.05$ was accepted, with a confidence interval of 95%. The main measure of the dependency is the correlation coefficient r . Its value is interpreted by the table presented below.

When the correlation coefficient is positive, the relationship between the units is positive correlation. In the case of a negative sign of the correlation coefficient the dependence is negative correlation.

SPSS 19.0 software for WINDOWS XP and Microsoft EXCEL 2010 were used for data processing.

RESULTS AND DISCUSSION

709 local residents along the Northern Black Sea coast were surveyed. Of these 94 people (13.26%) have responded that they use medicinal plants in veterinary medicine. The other 615 people (86.74%) do not use medicinal plants to treat animals.

A total of 46 species of medicinal plants from 40 genera from 28 families are used in the researched area for treatment and prophylaxis in veterinary medicine (Appendix, Table 1).

The curative plants of the local flora are represented with the highest number: 29 species. This number shows 4.89% of the total number of medicinal plants in the floristic sub-region Northern Black Sea coast [14]. These include, for example, *Cotinus coggygria*, *Matricaria chamomilla*, *Plantago major*, *Taraxacum officinale*, *Juglans regia* and some other. *Melaleuca alternifolia* is the only medicinal plant species foreign to Bulgarian flora. Medicinal plants characteristic of another floristic region of Bulgaria are 2 species: *Aesculus hippocastanum* and *Helleborus odorus*. 14 species of crop plants are used: *Allium cepa*, *Allium sativum*, *Petroselinum crispum*, *Helianthus annuus*, *Cucurbita moschata*, *Cucurbita sp.*, *Cydonia oblonga*, *Secale cereale*, *Triticum sp.*, *Aloe vera*, *Pelargonium roseum*, *Calendula officinalis*, *Salix babylonica*, *Zea mays* and *Nicotiana tabacum*.

Medicinal Plants Act of the Republic of Bulgaria includes 24 species. The remaining 22 species are referred to as medicinal in the specialized works on medicinal plants published in Bulgaria.

The families of Asteraceae (6 genera), Poaceae (5 genera), Lamiaceae (3 genera), and Caprifoliaceae (2 genera) are among the most widely used medicinal plants. The remaining families are represented by only one species.

People who use medicinal plants in veterinary medicine are mostly residents of smaller settlements and farmers raising animals. It should be noted here that pet owners (dogs, cats, etc.) are predominantly urban residents and rarely use medicinal plants to treat their pets. They prefer to use ready-made pharmaceutical products to treat their animals.

Ethnobotanical studies for other regions of Europe report results close to ours. For example, local population villages in Transylvania, Romania [30] reported that locals use 26 species of medicinal plants for veterinary purposes, 18 of which are wild and 8 species of cultivated plants. A study for the southern Italian region [31] reported the use of 31 species and for northwestern Spain 85 species [32] of medicinal plants used to treat animals.

In the survey, two veterinary practitioners are involved: one from Shabla and one from Obzor. An interesting fact is that both professionals admitted that they use medicinal plants in their veterinary practice. Another interesting fact is the use of medicinal plants as repellent against external parasites with different domestic animals or for treating livestock facilities for disinfection. Such plants are: *Artemisia sp.*, and *Sambucus nigra*. This application is reported by older people raising livestock in smaller settlements. Viegi et al. [33] reports the same application of these plants to Italy. The use of *Melaleuca alternifolia* is indicated by Varna residents, who use tea tree oil as a repellent against ectoparasites in dogs and cats. Another interesting application is indicated by a Topoli village resident, who describes the use of *Helleborus odorus* as an antipyretic for sheep with high temperature.

The most types of medicinal plants are used for the treatment of cattle: 29 species, followed by pigs: 26 species, horses and donkeys: 24 species, goats and sheep: 23 species, dogs and cats: 20 species, poultry: 15 species and rabbits: 11 species of medicinal plants. Most often, the same species of medicinal plant is used in different groups of animals, which shows that people living along the Northern Black Sea coast are well aware of their healing properties. Such plants are: *Sambucus nigra*, *Cotinus coggygria*, *Matricaria chamomilla*, *Allium cepa*, *Urtica dioica*, etc. It is an interesting fact that some of the most commonly used medicinal plants in veterinary medicine are the same both by locals on the North Black Sea coast and by countries far from Bulgaria such as Italy and Spain [31, 33]. Examples of such plants are *Sambucus nigra* and *Matricaria chamomilla*. On the other hand, traditional medicinal plants such as *Armoracia rusticana* and *Rumex sp.* for Transylvania [30] a territory significantly closer to Bulgaria is not used by the locals on the North Black Sea coast.

The most common medical conditions in which medicinal plants are administered are: colds, conditions associated with lactation in cattle, goats and sheep, wounds and skin issues, treatment against internal and external parasites of different groups of animals. The highest number of responses were obtained for the usage of *Cotinus coggygria* (44.68%), followed by *Juglans regia* (14.6%), *Matricaria chamomilla* (14.6%) and *Salix sp.* (12.77%) (Appendix, Table 2). These medicinal plants mentioned above, except the willow, are applied for skin conditions and surface wounds. This fact indicates that for more complicated animal health conditions, local people do not rely on herbal treatment but seek pharmaceutical drugs. This is also evidenced by the fact that 26 of the species of medicinal plants used have received only one answer. On the one hand, the use of ready-made pharmaceutical drugs provides rapid and successful treatment of domestic animals, but on the other hand, it is the main prerequisite for the loss of ethnobotanical knowledge. The large number of single answers received is from older residents from small settlements. Their knowledge of the use of medicinal plants in veterinary medicine is not passed on to younger local people. The core reason for that situation is that they do not raise animals or, if they do so, they prefer to treat them with ready-made pharmaceutical drugs.

From the research on the application of medicinal plants in veterinary medicine in the area of the Northern Black Sea coast we have found that all the medicinal plants mentioned for use are described in the literature on animal treatment in Bulgaria.

Local people share their traditional ethnobotanical knowledge in application of the most useful part of the plant in veterinary medicine. According to the usable part of the medicinal plants (Figure 2) we have found the following results: the most common is the usage of the stems indicated for 12 species, blossoms indicated for 6

species and seeds indicated for 5 species of medicinal plants. Among these plants are the most commonly used medicinal plants by the local people in veterinary medicine: *Urtica*, *Artemisia*, *Matricaria*, *Tilia*, *Cucurbita*, etc. This proves the greater number of responses for the usage of these plants. As for the other usable parts of medicinal plants, 1 to 4 responses were obtained.

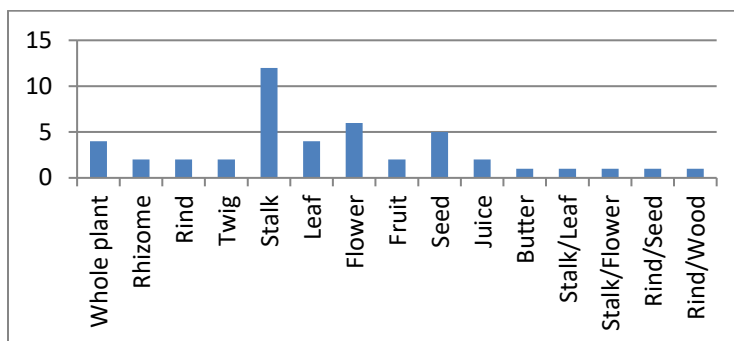


Figure 2: Proportion of usable parts of medicinal plants

We have found out that a significant number of the plants used by the local people to treat animals fall into the category of poisonous plants: 27 species from 24 genera from 18 families. Of these, 7 species (15.22%) can cause poisoning when taken in a bigger dose: *Sambucus*, *Aloe*, *Valeriana*, *Melaleuca alternifolia* and others. Contact dermatitis can be caused by 8 species (17.39%): *Allium cepa*, *A. sativum*, *Artemisia*, *Urtica*, etc. Different levels of toxicity have other 7 (15.22%) species: *Cotinus coggygria*, *Senecio vulgaris*, *Aesculus hippocasanum*, *Teucrium chamaedrys*, *Melaleuca alternifolia*, *Lolium perenne*, *Tribulus terrestris*. Two species (4.35%) are highly poisonous: *Helleborus odorus*, and *Nicotiana tabacum*. Medicinal plants causing poisoning if taken in higher dose and also contact dermatitis are 3 species (6.52%): *Artemisia absinthium*, *Taraxacum officinale*, *Agrimonia eupatoria*. One species (2.17%) may cause contact dermatitis and poisoning: *Cotinus coggygria*. *Nicotiana tabacum* is also highly poisonous and causes contact dermatitis.

Comparison of the degree of usage of medicinal plants according to the size of the settlement

94 local people from the Northern Black Sea coast region responded that they used medicinal plants for treatment and prophylaxis of animals. Of these, 59 people (62.77%) are town residents and 35 people (37.23%) are villagers.

The number of medicinal plants used in veterinary medicine is on average 2 species per person. We found out that urban and rural residents used equal number of medicinal plants to treat and protect animals, namely 30 species. This is due to the fact that the number of interviewed respondents in the villages is significantly smaller than the number of respondents in the towns, but they more often raise animals and use medicinal plants. In smaller towns such as Shabla, Aksakovo and some neighborhoods of Varna (Vinitza and Galata) some respondents raise animals in their yards and, if necessary, used medicinal plants. Having pets (dogs, cats, etc.) is more common in towns and cities. Herbal treatment with them, however, is rarely practised.

It is worth mentioning the use of crop plants in towns not mentioned for the villages: *Oryza sativa*, *Secale cereale*, *Triticum aestivum*, *Helianthus annuus*, and *Allium cepa*. On the other hand, villagers use more species of medicinal plants typical of the local flora: *Arctum lapa*, *Quercus cerris*, *Fraxinus ornus*, *Verbena officinalis*, *Tribulus terrestris*, and others. This fact shows that in small settlements the knowledge about the treatment of animals with local medicinal plants is still preserved.

For comparison, an ethno-veterinary study for Transylvania, Romania [30] states that 75% of villagers keep animals and use medicinal plants for their treatment. The twice lower use of medicinal plants for the treatment of

animals by the villagers in the study area compared to neighboring Romania is due on the one hand to the smaller number of people who keep animals and on the other hand to the increasing use of finished medicinal products.

Comparison of the degree of usage of medicinal plants according to respondent’s ethnicity

The ethnic composition of respondents who use medicinal plants in veterinary medicine is comparatively rich and includes 4 ethnic groups (Figure 3). Ethnicities such as Armenians and Tatars do not report using medicinal plants in veterinary medicine. This fact is probably due to the smaller number of participants from these ethnic groups in the survey and the fact that all representatives of the Armenian ethnos are residents of Varna and if they raise pet animals, they treat them with ready-made pharmaceutical products. Of the respondents, 93 people answered that they used from 1 to 5 species of medicinal plants and only one person – a Bulgarian used 7 species of medicinal plants for treatment of animals.

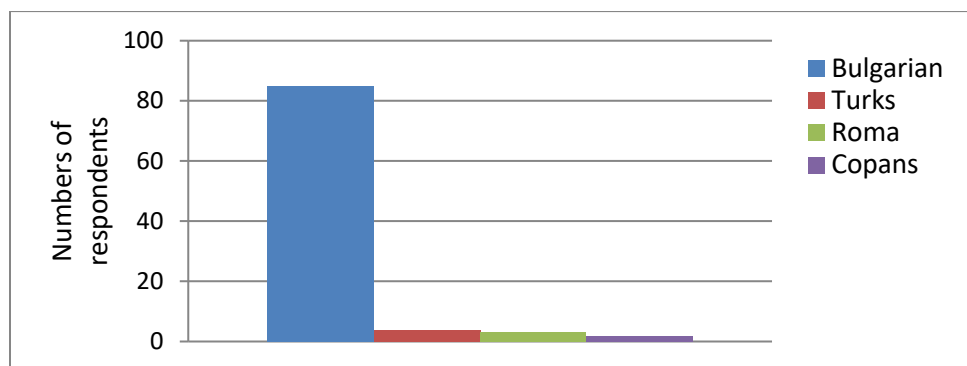


Figure 3: Distribution of respondents according to their ethnicity

A correlation analysis was performed to establish the relationship between the medicinal plants used and the respondent’s ethnicity. The correlation coefficient shows a weak negative correlation of the parameters ($r = -0.1$). The results are considered statistically reliable as $P = 0.02$.

Age-based comparison of respondents using medicinal plants in veterinary medicine

The distribution of respondents from the Northern Black Sea coast region by age (Figure 4) is as follows: with the largest number is that of people aged between 61 and 70. When going up and down the age scale, the number of people using medicinal plants to treat animals gradually decreases.

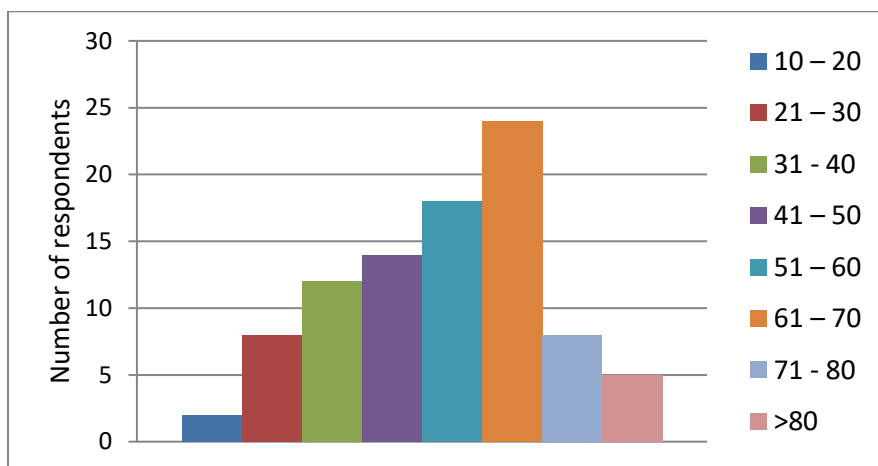


Figure 4: Distribution of respondents according to their age

Of the all the respondents surveyed, 93 people answered that they used from 1 to 5 species of medicinal plants and only one person, aged 61-70, used 7 species of medicinal plants. The results prove the working hypothesis that the traditional ethnobotanical knowledge for the treatment of animals is preserved with the older residents of the Northern Black Sea coast region.

A correlation analysis was performed to determine the correlation between the variables 'age' and 'number of respondents, which using medicinal plants in veterinary medicine'. After the correlations we made, we found a negative correlation ($r = -0.08$). The results are statistically reliable as $P = 0.005$.

Gender-based comparison of respondents using medicinal plants in veterinary medicine

41 of all the men surveyed (43.62%) and 53 of all the women surveyed (56.38%) admitted they used medicinal plants in veterinary medicine. These results correspond to the results of Blanco et al. [33], according to which women have more knowledge about the use of medicinal plants for the treatment of animals. Of all the respondents surveyed, 93 answered they used from 1 to 5 species of medicinal plants; and only one person, a man, reported about his usage of 7 species of medicinal plants. The greater use of medicinal plants by women is probably due to the fact that women traditionally use the knowledge about how to use medicinal plants in the household and farming.

The correlation dependence shows a weak negative correlation ($r = -0.18$) in the 'gender' and 'usage of medicinal plants' ratio. The results are statistically reliable as $P = 0.5$.

Educational level based comparison of respondents using medicinal plants in veterinary medicine

Of all the respondents using medicinal plants in veterinary medicine, the highest number is the one of people with secondary education: 56 people (59.57%), followed by people with primary and higher education: 18 people for each group (19.15%). The smallest number is that of people with elementary school education: 2 people (2.13%). It is noteworthy that non-educated people do not use medicinal plants in veterinary medicine. 93 of all the respondents answered that they use from 1 to 5 species of medicinal plants, and only one person with secondary education reported of usage of 7 species of medicinal plants.

Correlation dependence shows a weak positive correlation ($r = 0.08$) in the 'education' and 'medicinal plants used in veterinary medicine' ratio. The results obtained are statistically reliable.

Employment-based comparison of respondents using medicinal plants in veterinary medicine

The distribution of respondents using medicinal plants in veterinary medicine by employment is as follows: the biggest number, 61 people (64.89%), is for the employed individuals, followed by pensioners: 29 people (30.85%). The lowest number is for the unemployed: 3 people (3.19%) and the students: 1 person (1.06%). Of all the respondents, 93 people answered that they used from 1 to 5 species of medicinal plants and only one person, a pensioner, reported of usage of 7 species of medicinal plants.

An interesting fact is that the most active part of the local population, the employed individuals, takes time to treat their animals with medicinal plants. They are well informed about the healing properties and application of medicinal plants in veterinary medicine.

The correlation dependence shows a weak negative correlation ($r = -0.03$) in the 'gender' and 'medicinal plants used in veterinary medicine' ratio. The results are considered statistically reliable as $P = 0.02$.

A certain number of questions were asked during the survey. For each of them, 158 responses were received. The reason for the number of responses being greater than the number of respondents was that one respondent reported for the use of several medicinal plants.

"Where do you get medicinal plants from?"

It is a curious fact that the majority of medicinal plants (74.58%) are collected in the wild (Figure 5). This is an example of a well-kept relationship between local people and the nature. On the other hand, this fact is also indicative of a poorly developed economy. If people are busy, they would hardly take the time to gather the herbs themselves, dry them, preserve them, and prepare medicine from them.

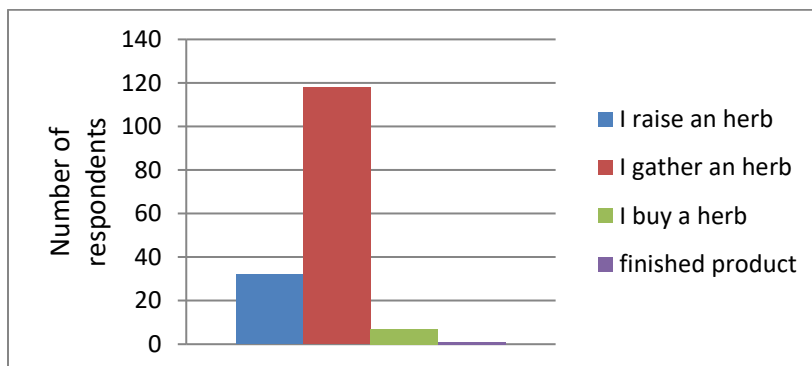


Figure 5: Distribution of the commonly used medicinal plants according to the way they are obtained

Cultivation of medicinal plants also has a significant share (20.25%). This is a characteristic of a practical person - cultivated medicinal plants are easily accessible and always 'available'. Another benefit of cultivation is that this preserves the natural spreading of medicinal plants. Unfortunately, this is not a motive for the cultivation of medicinal plants.

"Who recommended that you use medicinal plants?"

The skills and knowledge about the use of medicinal plants (62.03%), acquired from older relatives (Figure 6), is the one that had the greatest percentage of all answers. This clearly indicates generational renewal regarding veterinary medicine.

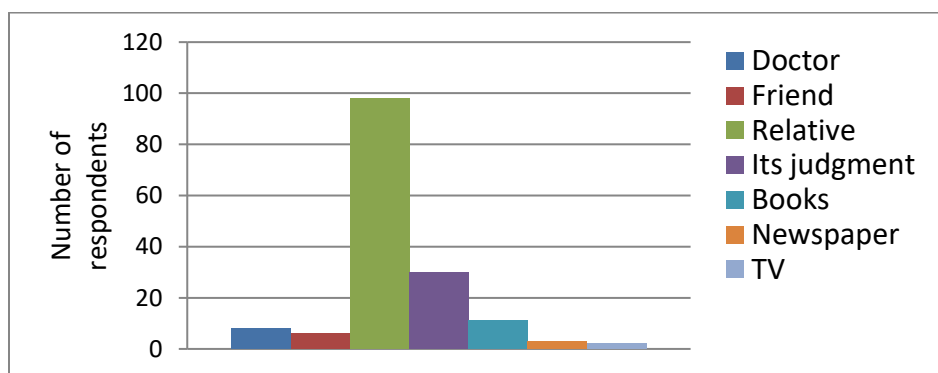


Figure 6: Distribution of the commonly used medicinal plants upon recommendation

The second most popular usage of medicinal plants is at a person's own discretion (18.99%). It is explained by the use of the most commonly used medicinal plants for which no specific recommendation is needed. Information on medicinal plants obtained from books (6.96%) and on doctor's recommendation (5.06%) have a small but important contribution. Mass media (newspapers, television and the Internet) make little contribution, probably because people rely on the information they already have and do not spend extra time searching for information there.

"Does the medicinal plant have a natural substitute?"

A very high percentage of respondents (90.03%) said that there was no substitute (Figure 7) for a medicinal plant which indicates that people rely on medicinal plants and would not substitute them for other types of treatment. On the other hand, the low percentage (1.76%) of positive responses shows that people don't have in-depth knowledge and cannot substitute a medicinal plant of one species with a plant from another species.

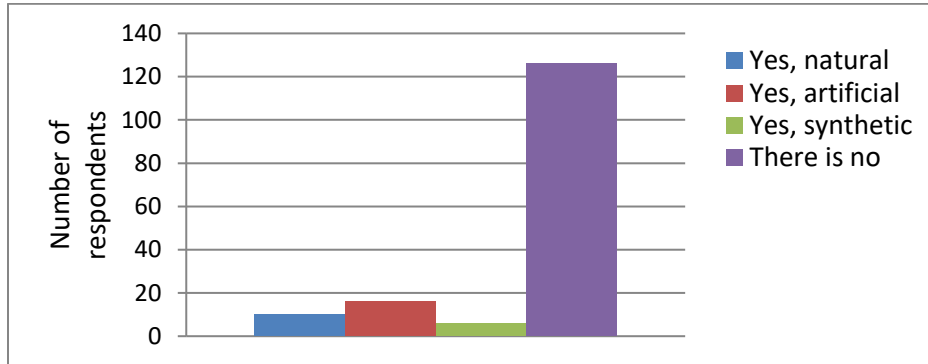


Figure 7: Distribution of the commonly used medicinal plants according to availability of a substitute

Most commonly, information about replacing a medicinal plant with an artificial herb or a synthetic product is reported by younger people and urban residents.

"How often do you use medicinal plants?"

Most answers (55.7%) were obtained for the "less frequent" use of medicinal plants (Figure 8). This fact indicates that local people use medicinal plants in cases when the condition of the animal does not require medical treatment. These are conditions related to surface wounds and skin issues.

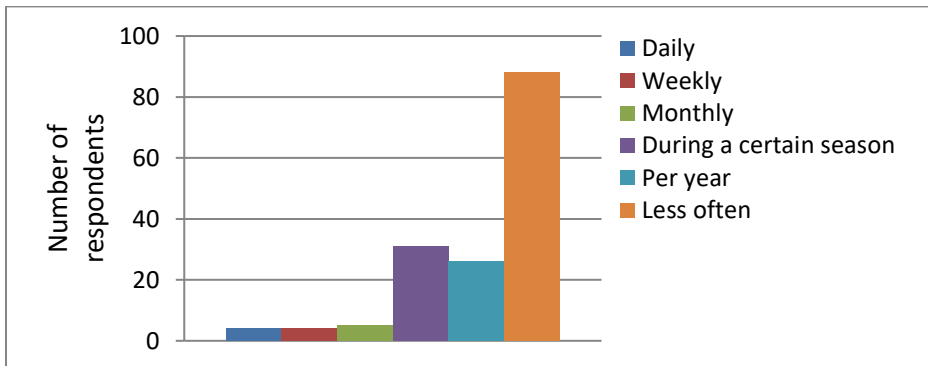


Fig. 8: Distribution of the commonly used medicinal plants according to the frequency of usage

The seasonal usage (19.62%) and year-round usage (16.46%) of medicinal plants are significantly less frequent. It is related to the use of medicinal plants for lactation problems, as well as for external and internal parasites control. There is a very low percentage of usage of medicinal plants as prophylactic measures. That is probably because people do not pay attention to the future health condition of the animal and they use medicinal plants when the disease is already a fact.

Appendix: Medicinal plants used in veterinary medicine

Family	Scientific name	Popular name	Origin	MPA RB	Usable plant part	Toxicity	Animals	Number of answers (%) n= 94
Amaryllidaceae	<i>Allium cepa</i> L.	Luk	4		1	2	C, HD,GS, Pg, R,P	1 (1,06)
Amaryllidaceae	<i>Allium sativum</i> L.	Chesan	4		1	2	C,HD,GS, Pg, R, P	6 (6,38)
Anacardiaceae	<i>Cotinus coggygria</i> Scop.	Tetra, smradlika, tatyurk	1	*	10	2;3	C, HD, Pg, D, Ct	42 (44,68)
Apiaceae	<i>Petroselinum crispum</i> (Mill.)Hill.	Magdanoz, merudiya	4		1	2	GS	1 (1,06)
Asphodelaceae	<i>Aloe vera</i> (L.)Burm.	Aloe	4		15	1	D, Ct	1 (1,06)
Asteraceae	<i>Arctium lappa</i> L.	Repey, butrak	1	*	10		C,HD,GS	2 (2,13)
Asteraceae	<i>Artemisia absinthium</i> L.	Obiknoven pelin, byal pelin	1	*	9	1;2	C, HD, GS, Pg, D, Ct, P	3 (3,19)
Asteraceae	<i>Artemisia sp.</i>	Pelin	1		9	2	C, HD, GS, Pg, D, Ct, P	1 (1,06)
Asteraceae	<i>Calendula officinalis</i> L.	Neven, zhalta ruzha	4		11	2	D, Ct	3 (3,19)
Asteraceae	<i>Helianthus annuus</i> L.	Slanchogled	4		11		C, HD, GS, Pg, R	1 (1,06)
Asteraceae	<i>Matricaria chamomilla</i> L.	Layka, laykuchka	1	*	11	2	C, GS, Pg, D,Ct, P	14 (14,89)
Asteraceae	<i>Senecio vulgaris</i> L.	Sporez	1	*	9	3	GS	3 (3,19)
Asteraceae	<i>Taraxacum officinale</i> Waber.	Gluharche, radika	1	*	1	1;2	C, HD, GS, Pg, D, Ct, R, P	1 (1,06)
Brassicaceae	<i>Capsella bursa-pastoris</i> (L.) Medik.	Ovcharska torbichka	1	*	9		C, GS, Pg	1 (1,06)
Caprifoliaceae	<i>Sambucus ebulus</i> L.	Trevist baz, byal baz, bazak, trambaz	1	*	12	1	C, HD, GS, Pg, D, Ct, R, P	4 (4,26)
Caprifoliaceae	<i>Sambucus nigra</i> L.	Darvesen baz, cheren baz, svirchna, svirhovina, svirchok, bazolin, mumuer	1	*	11	1	C,GS,Pg,D,Ct	3 (3,19)
Caprifoliaceae	<i>Valeriana officinalis</i> L.	Valeriana, dilyanka	1	*	9	1	C, HD,GS, Pg,Ct,P	1 (1,06)
Crassulaceae	<i>Sempervivum sp.</i>	Debelets	1		15		D, Ct	1 (1,06)
Cucurbitaceae	<i>Cucurbita moschata</i> Duchesne	Tikva	4		13		C, Pg, D, Ct	2 (2,13)
Cucurbitaceae	<i>Cucurbita sp.</i>	Tikva	4		13		C, Pg, D, Ct	2 (2,13)
Fabaceae	<i>Medicago sativa</i> L.	Lijcerna	4		9		GS	2 (2,13)
Fagaceae	<i>Quercus cerris</i> L.	Dab, Cer	1		6		HD, GS, Pg	1 (1,06)
Geraniaceae	<i>Pelargonium zonale</i> (L.) L'Her.	Mushkato	4		10		S	1 (1,06)
Hippocastanaceae	<i>Aesculus hippocastanum</i> L.	Konski kesten	3	*	6;13	3	D	1 (1,06)
Hypericaceae	<i>Hypericum perforatum</i> L.	Zhalt kantaron, kalachevo, pozaritsa, kisikolu	1	*	9;11	1	C, HD	2 (2,13)
Juglandaceae	<i>Juglans regia</i> L.	Oreh	1	*	12		C, HD, GS, Pg, D, Ct, R	14 (14,89)
Lamiaceae	<i>Melissa officinalis</i> L.	Matochina, limonche	1	*	9;10	1	C, HD, Pg, P	1 (1,06)
Lamiaceae	<i>Mentha spicata</i> L.	Dzhodzen, gyuzum, yuzum, chiriz, naane	1	*	9	2	C,HD, D, Ct	2 (2,13)
Lamiaceae	<i>Teucrium chamaedrys</i> L.	Cherveno podabiche	1	*	9	3	C,HD,GS	1 (1,06)
Malvaceae	<i>Tilia tomentosa</i> Moench.	Lipa	1	*	11		C, HD, GS, Pg, D, Ct, R	2 (2,13)
Myrtaceae	<i>Melaleuca alternifolia</i> (Maiden &	Chaeno darvo	2		16	3	D, Ct	1 (1,06)

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Oleaceae	<i>Fraxinus ornus</i> L.	Mazdrjan, Osen, Oksen	1	*	6		R,P	2 (2,13)
Plantaginaceae	<i>Plantago major</i> L.	Shirokolist zhivovlek	1	*	10		GS, Pg, D	1 (1,06)
Poaceae	<i>Cynodon dactylon</i> (L.) Pers.	Troskot, trosak	1		3		C, HD,GS, R, P,Pg	1 (1,06)
Poaceae	<i>Lolium perenne</i> L.	Raygras	1	*	9	3	Ct	1 (1,06)
Poaceae	<i>Oryza sativa</i> L.	Oriz	4		13		D, Ct	1 (1,06)
Poaceae	<i>Secale cereale</i> L.	Razh	4		13		C,HD,GS,P, Pg	1 (1,06)
Poaceae	<i>Triticum sp.</i>	Pschenitca, Zito	4		13		C,HD,GS,P, Pg	1 (1,06)
Ranunculaceae	<i>Helleborus odoros</i> Waldst. & Kit. ex Willd.	Kukuryak	3	*	3	4	C, HD, GS, Pg	4 (4,26)
Rosaceae	<i>Agrimonia eupatoria</i> L.	Kamshik	1	*	9	1;2	HD, GS	1 (1,06)
Salicaceae	<i>Salix babylonica</i> L.	Placheshta varba	4		8		R	1 (1,06)
Salicaceae	<i>Salix sp.</i>	Varba	1		8		R	12 (12,77)
Scrophulariaceae	<i>Verbascum sp.</i>	Lopen	1		11	1	C, HD, GS, Pg,	1 (1,06)
Solanaceae	<i>Nicotiana tabacum</i> L.	Tyutyun	4		10	2;4	C, HD, GS, Pg, D, Ct, P	1 (1,06)
Urticaceae	<i>Urtica dioica</i> L.	Kopriva	1		9	2	C, HD, GS, Pg, P	6 (6,38)
Verbenaceae	<i>Verbena officinalis</i> L.	Varbinka	1	*	9		GS	1 (1,06)
Zygophyllaceae	<i>Tribulus terrestris</i> L.	Babini zubi	1	*	9	3	C, HD, GS	1 (1,06)

KEY

Origin: 1 – local plant, 2 – foreign plant for Bulgaria, 3 – plant from another floristic region in Bulgaria, 4 – crop plant.

MPARB: Medicinal Plants Act of the Republic of Bulgaria [35]. All the plants included in the Act are marked with an asterisk. The other medicinal plants are described in the specialized works.

Usable plant part: 1 – whole plant, 2 – root, 3 – rootstock, 4 – tuber, 5 – corm, 6 – bark, 7 – wood, 8 – twig, 9 – stalk, 10 – leaf, 11 – blossom, 12 – fruit, 13 – seed, 14 – resin, 15 – sap, 16 – oil.

Toxicity: 1 – dose, 2 – contact dermatitis, 3 – poisonous, 4 – highly poisonous.

Animals: C – cattle, HD – horses and donkeys, GS – goats and sheep, Pg – pigs, D – dogs, Ct – cats, R – rabbits, P – poultry.

Number of answers: Percentage is different from 100 since more than one answer is possible.

CONCLUSION

The results of the research demonstrate that knowledge about the use of medicinal plants in veterinary medicine among the people living along the Northern Black Sea coast region is still preserved. This is also evidenced by the fact that the biggest number of the used medicinal plants is typical for the local flora of the region and the number of medicinal plants from another floristic region of Bulgaria, as well as plants, foreign to Bulgarian flora, is insignificant. On the other hand, the traditional ethno-botanical knowledge is preserved predominantly for older people in small settlements, which means there is a danger of losing traditional knowledge. This determines the need for ethnobotanical research in other regions of Bulgaria in order to preserve traditional knowledge.

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