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Original Scientific Paper

An ethnobotanical study on the usage of wild plants from Tara Mountain (Western Serbia)

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ABSTRACT:
In this study an ethnobotanical survey was conducted in western Serbia (Mt. Tara) with the aim of collecting and preserving the traditional botanical knowledge. A group of local inhabitants (56) was interviewed using semi-structured questionnaires. The Relative Frequency of Citation (RFC) and Jaccard Index (JI) were calculated. There are 78 wild plant species recorded. The reported plant species belong to 34 families, where the families Rosaceae (41.18%), Asteraceae (23.53%) and Lamiaceae (20.59%) were dominant. Out of 78 documented plants, 70 plants (89.74%) are used in folk medicine, 42 (53.85%) in human nutrition, 22 (28.20%) in animal nutrition, 14 (17.95%) plants are used for miscellaneous purposes, while two plants (2.56%) are used in ethnoveterinary medicine. The highest RFC was recorded for *Vaccinium myrtillus* (0.38), followed by *Urtica dioica* (0.34), and *Hypericum perforatum* (0.25) and *Fragaria vesca* (0.25). The most frequently used mode of preparation was as an infusion (70.51%), while the most used plant part was the leaf (56.41%) followed by the flower/inflorescences (37.18%) and aboveground parts (28.21%). The highest degree of similarity was determined with studies conducted in close proximity (Mt. Zlatibor, JI 33.04). Local recipes and new usage of some well-known traditional plants in Serbia and the Balkans were documented.

Keywords:
Balkans, wild plants utilisation, folk medicine, human and animal nutrition, *Vaccinium myrtillus*

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INTRODUCTION

Ethnobotany, the science of survival (Prance 2007), represents the scientific study of the interactions between humans and plants. In other words, this field encompasses studies on how humans use plants for medicine, food, construction, art, rituals, and more. Since ancient times, people have been using plants for numerous purposes. Collecting knowledge about plant species and their various uses is of great importance for the preservation of cultural heritage and the conservation of plant diversity (Muthu *et al.* 2006). Ethnobotanical research also provides answers to forms of ethnogenesis of certain ethnic groups and their way of living.

Today, between 70 and 95% of the world's population, mostly in poor and less developed countries, continue to rely on plants as their primary pharmacopeia (Willis 2017). According to MPNS (2020), 28,187 species are used in medicine, representing almost 7.5% of all plant life on Earth. However, the medicinal potential of wild plants remains insufficiently explored. Unrevealed medicinal plants, powerful sources of specialised metabolites, with potent biological activity, together with different ways of preparing and applying herbal remedies developed by

certain ethnic groups, present a platform for further phytochemical and pharmacological studies. Moreover, it is well established that most natural-based remedies exhibit fewer side effects compared to synthetic drugs. Thus, the main task of numerous scientists in the world is to seek new natural medicines. The starting point of such research is certainly comprehensive ethnobotanical studies.

The Balkan Peninsula is home to ca. 8000 vascular plant species of which 2600 to 2700 are endemics (Stevanović 2005). Out of 4246 taxa present in Serbia (Niketić *et al.* 2018), 1000 to 1500 are used as medicinal plants, foodstuffs, food preservatives, natural dyes or additives (Dajić Stevanović *et al.* 2014). However, in Serbia and in the entire Balkan region, there is an evident loss of traditional knowledge in the use of wild plants due to depopulation, ageing, migration, economic devastation and the abandonment of villages and underdeveloped regions (Dajić Stevanović *et al.* 2014). Although ethnobotanical research in Serbia has increased in recent years (e.g. Janaćković *et al.* 2022 and the references therein), most such studies focus on medicinal wild plants. It should be noted that traditional knowledge regarding wild plants used in human nutrition, veterinary medicine, domestic animal nutrition and ethnoculture is also very important and these data should be collected and preserved as well.

Serbia has a rich culture and tradition of using herbs for various purposes. However, there are still many areas in Serbia, especially in the west part of the country, with unrecorded ethnobotanical information. Therefore, the aim of our study was to collect and preserve data on the traditional uses of indigenous flora by the local population on Mt. Tara (Western Serbia) and to assess the list of the most valuable wild plants of the studied region. One of our goals was also to compare and discuss our results with previously published data conducted in other parts of Serbia, as well as on the Balkan Peninsula.

MATERIALS AND METHODS

Study area. Mt. Tara is located in the far west of Serbia in an area bounded by the Drina river, between the towns of Višegrad and Bajina Bašta. Some areas of Mt. Tara were designated a national park in 1981, representing one of the five national parks in Serbia. The National Park covers around 19,200 ha (N 43°52' E 44°02') and encompasses most of Mt. Tara area. Tara National Park is very sparsely populated, with fewer than 50 inhabitants per km^2, with district counties characterised by a permanent decline in population.

The investigated area covers 11 settlements (Mitrovac, Sokolina, Šljivovica, Kaluđerske bare, Osluša, Lađevac, Ledenice, Jasikovice, Kosa Anatema, Drundebo and kanjon Dervente), 4 villages (Rača, Beserovina, Rastište and Perućac) and one town (Bajina Bašta). The investigated points are located at different elevations (225–1591 m. a.s.l.).

Ethnobotanical survey. The research was conducted between May and July 2015. Groups of local inhabitants (56) were interviewed using semi-structured questionnaires. No special selection criteria were applied in the choice of respondents. From the 56 inhabitants interviewed, 44 are over the age of 40 (30 women and 14 men), while 12 respondents are younger than 40 (9 women and 3 men). In all villages, young people under the age of twenty were in the minority, reflecting the growing trend of the migration of young people to nearby towns in recent decades.

There are no explicit rules or regulations pertaining to ethnobotanical research in Serbia. The purpose, methodology and nature of the research were explained prior to starting the interviews and informed oral consent was obtained from all the respondents. The participants in the study agreed to participate voluntarily and were able to discontinue the interviews at any time. Upon completion of the study, all the data were deposited in the phonothèque of the Department of Morphology and Systematics of Plants, University of Belgrade - Faculty of Biology. Thus, the ethnobotanical research and related activities, including the collecting of plants, compiling databases, images, audio recordings, gathering information on the uses of traditional knowledge or other elements of biocultural heritage found in the study area were undertaken in compliance with the International Society of Ethnobiology (2006) code of ethics. No harmful consequences (biological or cultural) for the local people and local communities arose from this research and its related activities. During the study, all principles of the code of ethics were adhered to including intellectual property rights and support for the development of local cultures. All recommended standards for conducting and reporting ethnobotanical studies were followed in accordance with the guidelines proposed by Weckerle *et al.* (2018).

Data regarding the local names of the plants, the collection methods, storage and primary processing of the plant material, as well as the parts of the plant in use and mode of preparation of the herbal remedies were recorded. Information on the traditional use of herbs in folk medicine and ethnoveterinary, human and animal nutrition, as well as for other purposes was documented. Local recipes for the preparation of herbal remedies were additionally recorded. The plants were authenticated by the first and last authors of the current study, following Josifović (1970–1986). Local names were given according to Simonović (1959).

Each plant mentioned by the respondents was compared with a fresh specimen or with illustrations and photographs from referent literature sources. The nomenclature of the species was compiled from contemporary check-lists, monographs and databases, such as Euro+Med (2006+). The voucher specimens were deposited in the Herbarium of the University of Belgrade

- Faculty of Biology, Institute of Botany and Botanical Garden Jevremovac (Table 1). The audio data were stored at the Department of Morphology and Systematics of Plants, University of Belgrade – Faculty of Biology. Standard herbarium acronym follows Thiers (2024).

Data analysis

Relative frequency of citation (RFC). The RFC index (Tardío & Pardo-De-Santayana 2008) was evaluated by dividing the number of respondents who mentioned the use of the species by the total number of respondents participating in the survey. The RFC index ranges from "0" when nobody refers to a plant as useful to "1" when all the participants refer to a plant as useful.

The Jaccard index (JI). This index is used to compare the present study data with that of other ethnobotanical studies conducted in neighbouring areas and other regions in Serbia. The formula used to evaluate the JI index (González-Tejero *et al.* 2008) is as follows:

$$JI = c \times 100 / a + b - c$$

where, "a" is the recorded number of species of the study area "A", "b" is the documented number of species of the area "B" and "c" is the common number of species in both areas "A" and "B." In the case of local communities, "a" is the number of species reported by the local community "A," "b" is the number of species cited by the local community "B" and c is the number of species reported by both "A" and "B."

RESULTS

Quantitative ethnobotanical analyses. The results of the survey are presented in Table 1 where the plants are arranged in alphabetical order. In this study, 78 wild plant taxa cited by the respondents have been recorded. The reported plant species belong to 34 families, where the families Rosaceae (41.18%), Asteraceae (23.53%) and Lamiaceae (20.59%) were dominant. Out of 78 documented plants, 70 plants (89.74%) are used in folk medicine, 42 (53.85%) in human nutrition, 22 (28.20%) in animal nutrition, 14 (17.95%) plants are used for miscellaneous purposes, while two plants (2.56%) are used in ethnoveterinary medicine. The RFC values ranged from 0.02 to 0.38. The highest RFC was recorded for *Vaccinium myrtillus* (0.38), followed by *Urtica dioica* (0.34), *Hypericum perforatum* (0.25) and *Fragaria vesca* (0.25). The most frequently used mode of preparation was as an infusion (70.51%), while the most used plant part was the leaf (56.41%) followed by the flower/inflorescences (37.18%) and aboveground parts (28.21%).

Wild plants used for medicinal purposes. A wide spectrum of diseases which can be treated by different plant species is recorded (Table 1). The most cited medicinal use was for treating genitourinary system disorders (32.05%), followed by digestive system disorders (30.77%) and immune system disorders (28.20%).

It is noted that some plant species are used for making herbal 'rakija' (in Serbian), a traditional Serbian alcoholic drink. Furthermore, the respondents mentioned rakija which contains *Teucrium chamaedrys, Achillea millefolium* and *Juniperus communis* which helps with blood circulation. In addition, rakija containing *Polygonum aviculare, Equisetum arvense* and *Agrimonia eupatoria* helps with urinary tract inflammation, viral infections and inflammation, while rakija which contains *Hypericum perforatum*, *Artemisia absinthium*, *Thymus serpyllum*, *Achillea millefolium* and *Juniperus communis* is used to treat stomach problems. *Erica carnea,* when kept for 45 days in rakija, could be used daily to improve eyesight.

To obtain oil extracts several plants and their parts are soaked in different oils for 40 days. These oil extracts can be obtained from one plant (e.g. *Hypericum perforatum*) or in combinations (e.g. *H. perforatum* with *Achillea millefolium,* used for back massage).

Some plants are mixed with honey, for example, the seeds of *Urtica dioica* for treating anemia, the functioning of the thyroid gland and to strengthen immunity. The fruits of *Sambucus nigra* mixed with in honey are also beneficial for treating blood system disorders.

The participants also mentioned a tea mixture for detoxification and the removal of excess fluid. This mixture contains the fruits of *Rosa canina*, and *Juniperus communis*, and the inflorescences of *Tilia* spp., *Sambucus nigra*, along with *Melissa officinalis*, *Achillea millefolium*, *Urtica dioica* and *Salvia officinalis*.

Wild plants used in human nutrition. Different parts of the plants are used (e.g. the leaves for salads, fruits) in human nutrition. Various flowers and fruits are used to make juices, jams and fruit pickles. Some plants are used as spices. In addition, different plant parts are used for making bread (the leaves of *Allium ursinum*; the fruit of *Corylus avellana*; the bulbs of *Lilium martagon*). It is interesting to note the usage of fried leaves of *Symphytum officinale* in omelettes; its leaves are also used together with potatoes to make 'musaka' (in Serbian, it is traditionally a meal with potatoes and minced meat). We documented the preparation of different soups with wild plants (the leaves, flower buds and flowers of *Primula veris*; the leaves of *Urtica dioica*; the leaves of *Melissa officinalis* with potatoes and carrots). Additionally, the leaves of *Urtica dioica* are used with potatoes and onions to make pies, while the flowers of *Robinia pseudoacacia* are used in fritters.

Wild plants used in domestic animal nutrition and ethnoveterinary medicine. Different fresh parts of wild plants are used in animal nutrition (e.g. the whole plant of *Cichorium intybus,* the rhizomes of *Polypodium*

vulgare, the fruits of *Quercus cerris,* and the leaves of *Taraxacum officinale*). *Arctium lappa* was exclusively mentioned for domestic animal nutrition. In ethnoveterinary medicine, the aboveground parts of *Hypericum perforatum* are used in animal skin protection and to treat liver fluke, while the rhizomes of *Helleborus odorus* are used to reduce fever in sick animals. The latter mentioned solely in the context of ethnoveterinary medicine.

Wild plants used for other purposes. Wild plants are also used for other purposes which contribute to daily life. The wood of various trees is used in wood processing and as fuel. Some plants are used for cleaning glass, for dyeing hair or clothes, for repelling rodents and moths, protecting cultivated plants or pickled vegetables, or for making coffee.

DISCUSSION

The results of the study were compared with the findings of ethnobotanical studies previously conducted on the Balkan Peninsula (see Supplementary Material 1).

Medicinal use. The ethnobotanical survey conducted on Mt. Tara revealed the notable reliance of the respondents on the wild growing plant species for various medicinal purposes. Plants are most commonly used to treat genitourinary, digestive and immune system disorders which is partly in accordance with previous studies carried out in Serbia where digestive and immune system disorders are the most frequently treated (Jarić *et al.* 2007; Šavikin *et al.* 2013; Zlatković *et al.* 2014; Janaćković *et al.* 2019; Matejić *et al.* 2020; Živković *et al.* 2020). The highest number of species cited for the treatment of the genitourinary system is unusual when compared to earlier studies conducted in Serbia, with a similar occurrence observed only on Mt. Suva (Jarić *et al.* 2015), where the usage of plants for the treatment of this organ system ranked second. The leaves, identified as the most used plant part in folk medicine in the current study, have also been utilised for different herbal medicine preparations in previous studies in Serbia (Šavikin *et al.* 2013; Janaćković *et al.* 2019, 2022; Živković *et al.* 2020, 2021). The most common type of preparation is an infusion as previously noted (Živković *et al.* 2021; Janaćković *et al.* 2022).

Out of the 78 recorded plant taxa, 48 were mentioned by three or more respondents, while ten species were mentioned by two participants and 20 plants by only one respondent. Although several researchers suggest that the criterion for the reliability of medicinal plant uses is the citation of a plant species by three or more respondents (Le Grand & Wondergem 1987; Johns *et al.* 1990), it is important to recognise that species which are mentioned by one or two respondents hold a certain value as their usage may represent remnants of traditional knowledge (Šavikin *et al.* 2013).

The highest RFC values were calculated for *Vaccinium myrtillus*, *Urtica dioica*, and *Hypericum perforatum*. The frequent citation of *H. perforatum* and *U. dioica* was anticipated since these are among the most trusted plant species cited by respondents surveyed on the territory of Serbia (Jarić *et al.* 2007, 2015; Zlatković *et al.* 2014; Janaćković *et al.* 2019, 2022; Matejić *et al.* 2020; Živković *et al.* 2021). In contrast, the high citation of *V. myrtillus* was unexpected. While this species is mentioned in several earlier ethnobotanical studies (Jarić *et al.* 2007, 2015; Pieroni *et al.* 2011; Šavikin *et al.* 2013; Matejić *et al.* 2020; Živković *et al.* 2020, 2021), the reliance of the respondents on it is not as great as in the current study. Almost every part of *V. myrtillus* is utilised by the respondents in the investigated area (the roots, aboveground parts, leaves, and fruit), while the findings of the aforementioned studies indicate mostly the usage of the leaves and fruits, with the exception of studies carried out by Matejić *et al.* (2020) where the seeds, and Živković *et al.* (2021) where the roots and flowers are used in traditional medicine.

When compared to previous ethnobotanical studies conducted in Serbia, the utilisation of several plant species in folk medicine is recorded for the first time (*Erica carnea*, *Polygonatum multiflorum*, *Populus tremula*, *Sedum acre*, and *Trifolium repens*). The novelty of the traditional use of these species was also compared to Serbian medicinal textbooks (Tucakov 1986; Sarić 1989) and further discussed.

We documented the usage of winter heath (*Erica carnea*) as an infusion or herbal rakija made of aboveground parts in order to treat urinary infections, regulate blood pressure and improve eyesight. Sarić (1989) also mentioned the usage of *Ericae herba* as a component of some diuretic and urinary antiseptic herbal mixtures, while to the best of our knowledge the other two uses are a novelty for Serbia and also the Balkans.

Winter heath is distributed mainly in Western Serbia (including previously investigated Mts. Zlatibor and Kopaonik) (Josifović 1970–1986). Its localised distribution may be one of the reasons why the usage of this species is recorded for the first time in ethnobotanical studies. It should also be mentioned that despite its localised natural habitats, the species is widely sold on markets and planted as an ornamental species (Josifović 1970–1986).

The respondents also stated their reliance on Solomon's seal (*Polygonatum multiflorum*). Herbal rakija prepared with rhizomes is used in the treatment of rheumatism, and joints and back ailments. In Serbia, there are four species of this genus (Josifović 1970–1986), but only *P. odoratum* (syn. *P. officinale* All.) is noted in a previous investigation on Mt. Kopaonik where ointment made of rhizomes is used to treat joint inflammation, which is similar to the present study, and for festering wounds and ulcers, and ingrown toenails (Jarić *et al.* 2007). In a textbook on medicinal herbs (Tucakov 1986),

P. odoratum is mentioned for the treatment of ailments similar to those cited in the study of Jarić *et al.* (2007), and it is also quoted that related species, *P. multiflorum*, has similar phytochemical composition and uses. Another observation related to *P. multiflorum* is the name used for it by the respondents. The Serbian name cited for this species is 'kostobolja' (Eng. bone ache) which reflects its medicinal uses and emphasises how information related to its medicinal properties could be conveyed. *P. multiflorum* has not been mentioned in ethnobotanical studies from the Balkan Peninsula.

Species of the genus *Sedum* (*S. spectabile* Boreau. and *S. telephium* L.) are known for their utilisation in traditional medicine from previous ethnobotanical studies (Jarić *et al.* 2015; Matejić *et al.* 2020), while the application of fresh aboveground parts of goldmoss stonecrop (*S. acre*) to treat skin warts from the current study has not been previously recorded in Serbia. Tucakov (1986) noted this plant for its antibacterial properties, used in the treatment of haemorrhoids and inflamed, itching skin around the anus, while Sarić (1989) indicated its usage for skin complaints. This species is used on the territory of Bosnia and Herzegovina and Croatia to treat skin warts, as reported in the present study (Redžić 2007; Šarić-Kundalić *et al.* 2011; Varga *et al.* 2019). In the Balkans, goldmoss stonecrop is used in the treatment of haemorrhoids (Vokou *et al.* 1993; Menković *et al.* 2011), as a diuretic, for urinary infections and prostate inflammation (Vokou *et al.* 1993; Redžić 2010), as a hepatic remedy, and for hypertension (Vokou *et al.* 1993).

The use of European aspen (*Populus tremula*) as a medicinal plant is a novelty for ethnobotanical studies from Serbia and the Balkans. The usage of this species for the treatment of the urinary system, as noted in this study, has been mentioned in medicinal textbooks (Tucakov 1986; Sarić 1989), while its anti-inflammatory properties documented in this study have not been previously highlighted.

In the current study both *Trifolium* species (*T. pratense* and *T. repens*) are recorded as having the same medicinal properties. The aboveground parts of red clover (*T. pratense*) and white clover (*T. repens*) are administered in the form of an infusion to treat kidney and urinary tract ailments. Red clover is used in Eastern and South-Eastern Serbia as a source of vitamins, and to treat pharyngitis (Matejić *et al.* 2020; Živković *et al.* 2020), while white clover is not documented in Serbian ethnobotanical studies or medicinal textbooks (Tucakov 1986; Sarić 1989). In contrast, this species is more frequently used as a medicinal plant in other Balkan countries (Šarić-Kundalić *et al.* 2010, 2011; Mustafa *et al.* 2012; Varga *et al.* 2019; Ginko *et al.* 2022). Šarić-Kundalić *et al.* (2010) noted that both *T. pratense* and *T. repens* can be used for the treatment of the same ailments as in the present study, while Varga and collaborators (2019) cited the similar usage of *T. repens* as recorded on Mt. Tara.

Some new uses of traditionally well-known medicinal plants are also recorded. The most prominent novelties are related to the following species: *Abies alba*, *Equisetum arvense*, *Gentiana lutea*, and *Pinus sylvestris*. The resin of European silver fir (*A. alba*) is used to treat arthritis (Matejić *et al.* 2020), similar to findings in the current study, while the usage of an infusion made of leaves to cure sterility has not been mentioned in Serbia or the Balkans. Widely known and used field horsetail (*E. arvense*) still has some undisclosed medicinal properties as observed in this study. The respondents stated that this plant species can be used for eye washes and rejuvenation, which represent a new usage for Serbia and the Balkans. Similarly, Scotch pine, *P. sylvestris* is used for thyroid gland ailments and blood pressure complaints which has not been previously recorded in Serbia or in the Balkans. The present study also reports a new usage of the root of *G. lutea*, as herbal rakija, in the treatment of thyroid gland disorders. These findings could serve as guidelines for further phytochemical and pharmacological investigations.

Plant species *Betula pendula* and *Urtica dioica* are well known for their use in hair-care, while two other well-known and utilised species (*Rubus fruticosus* and *Taraxacum officinale*) have not been previously reported for their hair growth and strengthening properties.

Human nutrition. Many of the mentioned plants have been recorded in human nutrition, but in some cases, the consumed plant parts in the present study differ from those in the literature. For example, we documented that the flowers and leaves of *Hyssopus officinalis* are used in human nutrition, while Redžić (2006) mentioned that young shoots of this species are used as a food supplement. Also, a new finding is the consumption of *Primula veris* flower buds as food. Although previous studies documented the use of the leaves and flowers in salads (Vitasović-Kosić *et al.* 2021), we demonstrated that the local population also collected the other parts including the flower buds.

The type of preparation can also vary. In this study it was found that jam is made from *Viola odorata* flowers. This result presents new information as it was previously reported that the flowers can be used as a spice or beverage (Redžić 2006) or boiled with a vegetable mix (Varga *et al.* 2019).

For the first time, it was recorded that the inhabitants made bread using the leaves of *Allium ursinum*, commonly known as wild garlic. In previous ethnobotanical studies on the Balkan peninsula, it was widely used fresh (Jarić *et al.* 2007, 2015; Zlatković *et al.* 2014) in salads (Jarić *et al.* 2007, 2015) or pies (Mustafa *et al.* 2020).

In earlier research conducted in Serbia comfrey (*Symphytum officinale*) was not documented as being used as food. However, our results noted that the leaves are used to prepare some specialities. In other Bal-

kan countries, for example, in Croatia, the leaves and roots can be boiled, used for salads or added to various dishes (Vitasović-Kosić *et al.* 2021). On the other hand, in Bosnia and Herzegovina, the root and young shoots were used as cooked vegetables (Redžić 2006). This plant should be used carefully because it contains a small quantity of pyrrolizidine alkaloids (Vitasović-kosić *et al.* 2021).

In our investigation, the consumption of fried leaves of lungwort (*Pulmonaria officinalis*) was presented for the first time. To date, it was noted that young shoots of lungwort were prepared as cooked vegetables (Redžić 2006). Additionally, Vračarić *et al.* (1977) reported that the young leaves of this species are rich in vitamins, and can be used to prepare soup or, rarely, in salads.

Overlap of medicinal and food plants. In our study almost 90% of the plant species overlap as food and medicine. Among 42 recorded plants used in human nutrition, 37 are used also in folk medicine. Only five species are cited for human nutrition only (*Fagus sylvatica, Lilium martagon, Polypodium vulgare*, *Rumex acetosa* and *R. patientia*).

Similar findings (almost completely overlapping) were observed in previous studies conducted in eastern Serbia (Janaćković *et al.* 2019, 2022) and south-eastern Serbia (Jarić *et al.* 2015). In contrast, in the study conducted in central Serbia, out of 24 plant species mentioned for nutrition, slightly more than half are used for both nutrition and medicine (Jarić *et al.* 2007). The findings also differ in studies conducted in Croatia. In Dalmatia, 41 plant taxa were mentioned as medicinal plants, 43 as food plants, and 42 overlapped (Varga *et al.* 2019), while in Istria 31 species were used exclusively as food, 50 for medicinal purposes, and 40 species overlapped (Vitasović-Kosić *et al.* 2017). In another study carried out in the north-eastern part of Croatia, 37 species were used exclusively as medicine, and 7 species overlapped, but there were no plants used solely as food (Žuna Pfeiffer *et al.* 2020).

Domestic animal nutrition and ethnoveterinary medicine. There are few studies about wild plants used for domestic animal nutrition and ethnoveterinary purposes in the Balkans, with most focusing on only medicinal plants. We have documented that different fresh parts of wild plants can be used in domestic animal nutrition, which is in agreement with Janaćković *et al.* (2019, 2022). Numerous wild plants, which have adapted to local, rough conditions, have significant potential as a livestock feed.

A few species utilised in human nutrition can also be used for domestic animal nutrition, such as the fruits of *Cornus mas*, *Malus sylvestris*, and *Pyrus pyraster*, or the underground parts of *Polypodium vulgare*. Although it is already known that people consume the rhizome of *P. vulgare* raw (Sarić 1989) or for bread (Redžić & Ferrier 2014), our results showed that it is also used for animals.

Domestic animals were reported to consume the aboveground parts and roots of *Sambucus ebulus*. This is a unique usage because in earlier studies, dwarf elder was mentioned exclusively in the treatment of various ailments (Savić *et al.* 2019; Mullalija *et al.* 2021; Janaćković *et al.* 2022) or for other purposes such as being added to wine for color (Varga *et al.* 2019).

Our findings regarding the usage of St John's wort (*H. perforatum*) and hellebore (*Helleborus odorus*) in ethnoveterinary medicine are in line with studies conducted in eastern Serbia (Janaćković *et al.* 2019, 2022; Marković *et al.* 2021). The use of hellebore for ethnoveterinary purposes has been documented in earlier ethnobotanical studies conducted in Serbia (Jarić *et al.* 2007; Pieroni *et al.* 2011; Janaćković *et al.* 2019, 2022). The present results confirmed its usage in reducing the temperature of sick animals, which was recorded previously in southeastern Serbia (Marković *et al.* 2021; Janaćković *et al.* 2022).

Other purposes. According to the local inhabitants, two well-known medicinal and edible plants, *Thymus serpyllum* and *Urtica dioica,* can be used for washing glassware (dishes). This information has not been recorded before. During our research it was also noted that the local population used the flowers of *Verbascum densiflorum* for sunbathing, a novelty in ethnobotanical studies in Serbia and other Balkan countries.

Accessibility of wild plants. All the reported species mentioned in the survey are easily accessible in nature according to the respondents. Only some species are difficult to find, such as: *Geranium robertianum*, *Centaurium umbellatum* and *Gentiana lutea*. Considering that *G. lutea* has been subject to many years of exploitation due to the use of the roots in making rakija, this plant can now only be found in certain places on Mt. Tara. It is currently being cultivated in the nurseries of the National Park. This example alone highlights how important and necessary it is to educate people about the sustainable exploitation of the reported plants in their natural habitats, as well as their possible cultivation.

Ethnobotanical similarities with other ethnobotanical investigations in Serbia (Jaccard index). We carried out an ethnobotanical comparison between our results and the data obtained from earlier studies conducted on the territory of Serbia (see Supplementary Material 2). According to the JI (Table 2), the highest degree of similarity was observed with studies conducted on Zlatibor (south-western Serbia) with a JI of 33.04. This was expected as Mt. Zlatibor is around 40 km from Mt. Tara.

Table 1. A list of wild plants from Mt. Tara used in traditional medicine, in human and domestic animal nutrition and ethnoveterinary and for other purposes.

Botanical taxa, family and voucher number	Local name	RFC*	Parts used in folk medicine	Mode of preparation	Medicinal use	Human nutrition	Domestic animal nutrition	Other purposes and ethnoveterinary
Abies alba Mill., Pinaceae (KMSB 95000)	Jela	0.04	leaf, resin	infusion, external	sterility, rheumatic disease			stem - wood processing
Achillea millefolium L., Asteraceae (KMSB 95001)	Hajdučka trava	0.18	root, aboveground parts with root, leaf, flower	oil extract, herbal *rakija*, powder, infusion	liver, stomach, increased appetite, antiseptic (throat), haemorrhoids, skin (wounds), inflammation, diabetes, kidney, diarrhoea, stomach virus, rheumatism, genital diseases, immunity, powder directly on the wound, injuries, circulation	flower	flower	the leaves are added to oil for sunbathing
Aesculus hippocastanum L., Sapindaceae (KMSB 95002)	Divlji kesten	0.04	flower	oil extract	wounds		seed	seed – the protection of clothes against moths, oil for sunbathing
Agrimonia eupatoria L., Rosaceae (KMSB 95003)	Petrovac, ranjenik	0.04	aboveground parts	infusion	colds, throat, bacterial infection, inflammation and swelling of the liver, stomach, wounds			
Allium ursinum L., Amaryllidaceae (KMSB 95004)	Sremuš	0.20	bulb, leaf, flower	infusion, fresh, herbal *rakija*	reduces blood pressure and blood sugar, cleanses the blood vessels, strengthens the body,	the leaves for fresh salads, bread, pies, herbal spread, as a spice	leaf	
Arctium lappa L., Asteraceae (KMSB 95005)	Čičak	0.02					aboveground parts with root	
Artemisia absinthium L., Asteraceae (KMSB 95006)	Pelen, pelin	0.05	aboveground parts	herbal *rakija*	stomach problems, circulation, strengthen the body, diarrhoea, diabetes			
Asarum europaeum L., Aristolochiaceae (KMSB 95007)	Kopitnjak	0.02	rhizome, leaf, flower	infusion	lungs, heart			
Betula pendula Roth, Betulaceae (KMSB 95008)	Breza	0.07	leaf, sap	infusion	urinary tract and kidneys (diuretic, to treat kidney stones), prostate, detoxification, for hair strengthening	Juice		
Centaurium umbellatum Gilib, Gentianaceae (KMSB 95009)	Kičica	0.07	aboveground parts, flower	infusion	stomach (dyspepsia, gastric acid), increased appetite, bone marrow (haematopoiesis), fever, lungs, kidneys, diabetes, blood diseases			
Chelidonium majus L., Papaveraceae (KMSB 95010)	Rusa trava, rusa	0.05	aboveground parts, leaf	fresh	liver (jaundice), warts, skin cancer, tongue, throat, stomach, sterility, psoriasis, to strengthen the body		aboveground parts with root	
Cichorium intybus L., Asteraceae (KMSB 95011)	Vodopija, cikorija	0.07	aboveground parts, flower, stem	infusion	against diarrhea, fluid elimination and cleansing the body, to strengthen the body, cancer		aboveground parts	root for preparing coffee

Cornus mas L., Cornaceae (KMSB 95012)	Dren, drenjak	0.07	leaf, bark	decoction, fresh, cooked	diabetes	fruit used for jam and juice	fruit	
Corylus avellana L., Betulaceae (KMSB 95013)	Leska	0.07	leaf, inflorescence, fruit	infusion	against jaundice, kidneys (to treat stones), urinary tract infection	fruit for making bread (as flour)		
Crataegus monogyna Jacq., Rosaceae (KMSB 95014)	Glog	0.14	flower, fruit	infusion	blood vessels (blood flow), insomnia, heart muscle (the prevention of heart attack), the brain	fruit		
Equisetum arvense L., Equisetaceae (KMSB 95015)	Rastavić	0.07	aboveground parts	infusion	intestines, rejuvenation, urinary tract (infection, calculi, sand), kidneys (stones), stomach, arthritis, eye wash			
Erica carnea L., Ericaceae (KMSB 95016)	Crnjuša	0.02	aboveground parts, leaf	infusion, herbal *rakija*	urinary infections, regulates blood pressure, improves eyesight			
Fagus sylvatica L., Fagaceae (KMSB 95017)	Bukva	0.07				leaf, fresh fruit	leaf, fruit	Stem - wood processing
Filipendula ulmaria (L.) *Maxim,* Rosaceae (KMSB 95018)	Suručica	0.04	aboveground parts	infusion	natural painkiller			
Fragaria vesca L., Rosaceae (KMSB 95019)	Šumska jagoda, divlja jagoda	0.25	root, aboveground parts with root, leaf, flower	infusion	blood vessels, heart, diabetes, diarrhoea, problems with digestion	fruit for making juice and jam, Serbian delicacy *"slatko"*, liquor, syrup		
Fumaria officinalis L., Papaveraceae (KMSB 95020)	Dimnjača	0.02	root	infusion	against jaundice, blood system			
Gentiana lutea L., Gentianaceae (KMSB 95021)	Lincura	0.09	root	infusion, herbal *rakija*	liver, pancreas, spleen, stomach, increased appetite, blood circulation, strengthen the body, back pain, thyroid gland			
Geranium robertianum L., Geraniaceae (KMSB 95022)	Zdravac	0.02	root, leaf, flower	infusion	sterility			
Helleborus odorus Waldst. et Kit., Ranunculaceae (KMSB 95023)	Kukurek	0.02					rhizome	rhizome - for decreasing a temperature of sick animal
Hypericum perforatum L., Hypericaceae (KMSB 95024)	Kantarion	0.25	aboveground parts, flower, leaf	infusion, oil extract	stomach problems, liver, stomach (ulcers, acid levels), wounds, burns, bronchitis, antibiotics, bone, eczema, psoriasis, sun protection, antiseptic, depression, injuries, cuts, spine massage, analgesic	aboveground parts	aboveground parts	aboveground parts - animal skin diseases and to treat liver fluke
Hyssopus officinalis L., Lamiaceae (KMSB 95025)	Miloduh	0.02	leaf	infusion	increases the level of selenium in the body, respiratory pathways	leaf, flower, spice		
Inula helenium L., Asteraceae (KMSB 95026)	Oman	0.05	aboveground parts with root	infusion	respiratory tract, pneumonia, asthma, bronchitis, expectorant			

Juglans regia L., Juglandaceae (KMSB 95027)	Orah	0.05	leaf, fruit	herbal *rakija*	sun protection, stomach problems, hair strengthening, thyroid gland			leaf and bark for dyeing cloth and hair
Juniperus communis L., Cupressaceae (KMSB 95028)	Kleka	0.14	"fruit", leaf	infusion, herbal *rakija*	cleaning the intestines, kidneys and urinary tract (diuretic, blood circulation), regulates the level of acid in the stomach, cancer, to treat heartburn	"fruit" liquor and as a spice		
Lilium martagon L., Liliaceae (KMSB 95029)	Zlatan	0.02				Bulb for making bread (as flour)		
Malus sylvestris (L.) Mill. Rosaceae (KMSB 95030)	Divlja jabuka	0.09	leaf, fruit	fresh, infusion	blood vessels, cleaning and strengthening the body, blood pressure, anti-virus, obesity	fruit for fruit pickle, jam and for vinegar	fruit	
Matricaria chamomilla L., Asteraceae (KMSB 95031)	Kamilica	0.09	leaf, inflorescence	infusion	stomach problems, constipation, antiseptic, analgesic, eyewash, sedative, digestion, disinfection			
Melissa officinalis L., Lamiaceae (KMSB 95032)	Matičnjak	0.05	aboveground parts, leaf	infusion	anti-anxiety, sedative, depression, nervousness, headaches, stomach bloating, blood cleansing	aboveground parts		
Ononis spinosa L., Fabaceae (KMSB 95033)	Zečji trn	0.05	aboveground parts with root, root	infusion	kidneys, urinary tract, arthritis			
Origanum vulgare L., Lamiaceae (KMSB 95034)	Divlji origano, vranilovka	0.05	aboveground parts with root	infusion, oil extract	antiseptic, stomach problems, urinary infections, *Escherichia coli*	leaf		
Picea abies Karst., Pinaceae (KMSB 95035)	Smrča	0.02	Resin	external	making tar for skin and rheumatic diseases			Stem - wood processing
Pinus nigra Arn., Pinaceae (KMSB 95036)	Crni bor	0.05	Resin, leaf, shoots	external	for rheumatic diseases, to strengthen the body, regeneration of the cells	young shoots mixed with honey		
Pinus sylvestris L., Pinaceae (KMSB 95037)	Beli bor	0.18	leaf, resin	Mixed with honey	bronchitis, respiratory tract, asthma, coughing, thyroid glands, to strengthen the body, the blood (blood pressure), to clean the lungs of smokers			resin with honey or olive oil for making oil for protecting the skin from UV radiation and tar
Plantago spp., Plantaginaceae (KMSB 95038)	Bokvica	0.14	root, leaf	infusion, fresh, herbal *rakija*	rheumatism, sciatica, skin (ulcers, wounds, injuries, rashes, swelling, insect stings, to reduce itching), ingrown toenails, expectorant, immunity, blood cleansing	leaves for salads	leaf	
Polygonatum multiflorum (L.) All., Asparagaceae (KMSB 95039)	Kostobolja	0.04	rhizome	herbal *rakija*	rheumatism, joints, back pain			
Polygonum aviculare L., Polygonaceae (KMSB 95040)	Troskot	0.02	aboveground parts	infusion, herbal *rakija*	urinary tract infection, viral infection, gynaecological diseases			

Polypodium vulgare L., Polypodiaceae (KMSB 95041)	Slatka paprat	0.07				rhizome for making bread	rhizome	aboveground parts for dyeing hair
Populus tremula L., Salicaceae (KMSB 95042)	Jasika	0.02	leaf	infusion	urinary system, anti-inflammatory			
Potentilla erecta Raucher, Rosaceae (KMSB 95043)	Srčenjak	0.05	root, leaf	herbal *rakija*	blood diseases, to strengthen the heart muscle, prostate, wounds, regulates blood pressure			
Potentilla reptans L., Rosaceae (KMSB 95044)	Petoprst	0.02	leaf	fresh	skin diseases (wounds, warts, skin growths)			
Primula veris Huds, Primulaceae (KMSB 95045)	Jagorčevina, jaglika	0.11	aboveground parts, leaf, flower	infusion	respiratory tract, flu, expectorant, throat, larynx	the leaves for fresh salads, leaf, flower buds and flowers for soup,		
Prunus avium L., Rosaceae (KMSB 95046)	Divlja trešnja	0.04	leaf, fruit	fresh	heart, eyes	leaves, fruit for jam, and Serbian delicacy *"slatko"*		
Prunus spinosa L., Rosaceae (KMSB 95047)	Trnjina	0.02	fruit	infusion	flu, colds, kidney, stomach problems (cramps, diarrhoea), stomach bleeding, diabetes	fruit for fruit pickle		
Pulmonaria officinalis L., Boraginaceae (KMSB 95048)	Plućnjak	0.05	leaf, flower	infusion, fresh	cough, bronchitis, pharynx, lungs, respiratory tract	leaf		
Pyrus pyraster (L.) Burgsd., Rosaceae (KMSB 95049)	Divlja kruška	0.07	leaf, fruit, bark	infusion	prostate, fever, diabetes	fruit for fruit pickles	fruit	
Quercus cerris L., Fagaceae (KMSB 95050)	Cer	0.12	bark, fruit	infusion	rheumatic diseases, for the disinfection of the skin, gynaecological problems	fruit for making bread	fruit	Stem – wood processing, bark - dyeing cloth (wool)
Robinia pseudo-acacia L., Fabaceae (KMSB 95051)	Bagrem	0.05	flower	infusion	lungs, bronchitis	the flowers for making honey and juice and for making fritters,		
Rosa canina L., Rosaceae (KMSB 95052)	Šipurak	0.16	fruit	infusion	prevention of kidney stones and stones in the urinary tract, blood, fatigue, colds, immunity, detoxification	fruit for juice, jam, Serbian delicacy *"slatko"*, syrup and fruit pickles	used in animal nutrition	
Rubus fruticosus L., Rosaceae (KMSB 95053)	Divlja kupina, kupina	0.18	root, leaf, fruit	infusion, fresh	to treat bleeding, coughing, immunity, anaemia, stomach (stomach upset), hair growth, blood vessels, heart, urinary system, appendicitis	fruit for juice, jam, Serbian delicacy *"slatko"*, syrup and wine		

Rubus idaeus L., Rosaceae (KMSB 95054)	Divlja malina	0.11	leaf, flower, fruit	infusion, fresh	urinary system (diuretic), the heart, blood vessels, diarrhoea	fruit for jam, juice, *Serbian delicacy* "slatko"		
Rumex acetosa L., Polygonaceae (KMSB 95055)	Kiseljak	0.02				leaf		
Rumex patientia L., Polygonaceae (KMSB 95056)	Zelje	0.02				the leaves for soups, pies		
Salix alba L., Salicaceae (KMSB 95057)	Bela vrba	0.04	bark, young shoots	infusion	gastric diseases, antipyretic, rheumatic diseases, stomach, intestinal diseases, to improve blood circulation			
Salvia officinalis L., Lamiaceae (KMSB 95058)	Žalfija	0.11	aboveground parts, leaf	infusion	antiseptic (gargles), for the preservation of the gums and teeth, to remove teeth, herpes virus, colds, cough	leaf		
Sambucus ebulus L., Adoxaceae (KMSB 95059)	Abdovina, avdovina	0.05					aboveground parts with root	
Sambucus nigra L., Adoxaceae (KMSB 95060)	Zova	0.21	inflorescence, bark, fruit	infusion, mixed with honey	colds, bronchitis, fever, blood system, inflammation of the lungs, diabetes, detoxification, expelling excess fluid from the organism, nervous system, nausea, increases sweating, wounds, eczema, burns, kidneys, ureters, urinary tract infection, digestive tract, liver, antioxidant, balm of *Sambucus nigra* bark, oil and beeswax - healing wounds, eczema and burns	inflorescence for making syrup and juice, fruits for making jam and syrup		
Sedum acre L., Crassulaceae (KMSB 95061)	Mala bradavičarka	0.02	aboveground parts	fresh	skin warts			
Sempervivum tectorum L., Crassulaceae (KMSB 95062)	Čuvarkuća	0.04	leaf	fresh	inflammation and diseases of the ear, stomach, blood cleansing			
Sorbus domestica L., Rosaceae (KMSB 95063)	Oskoruša	0.02	leaf, bark	infusion	to reduce blood sugar	fruit for fruit pickles		
Symphytum officinale L., Boraginaceae (KMSB 95064)	Gavez	0.05	root, leaf, flower	infusion	injuries, fractures (for healing)	the leaves for making omelettes and other dishes "musaka" with potatoes		anti-rodent agent
Taraxacum officinale Weber, Asteraceae (KMSB 95065)	Maslačak	0.21	aboveground parts with root, leaf, inflorescences, root	infusion	bronchitis, respiratory tract, the immune system, cough, to strengthen the hair, liver (bile), increased appetite, blood vessels, detoxification, insect bites, high lipids	aboveground parts, for salads, for making honey and syrup	whole plant	

Teucrium chamaedrys L., Lamiaceae (KMSB 95066)	Podubica	0.12	aboveground parts, flower	infusion	liver, pancreas, spleen, stomach (ulcers, gastritis, *Helicobacter pylori*), increased appetite, diarrhoea, antiseptic, antioxidant, neutralizes toxins		aboveground parts	
Teucrium montanum L., Lamiaceae (KMSB 95067)	Iva	0.11	aboveground parts, leaf, flower	infusion, herbal *rakija*	strengthen immunity, digestive tract, liver, pancreas, stomach, reproductive system, inflammation of the gallbladder, tuberculosis			
Thymus serpyllum L., Lamiaceae (KMSB 95068)	Majčina dušica	0.20	aboveground parts, flower, leaf	infusion	antibiotics, sedation, antiseptic, regulates the level of stomach acid, viral infections, convulsions, cough, stomach problems, inflammation of the urinary tract, respiratory tract, colds	flower, spice		washing glassware and the protection of pickled vegetables
Tilia spp., Malvaceae (KMSB 95069)	Lipa	0.05	leaf, inflorescence, bark	infusion	insomnia, pain relievers, cold, internal hematoma, sedative	flower		
Trifolium pratense L., Fabaceae (KMSB 95070)	Crvena detelina	0.04	aboveground parts, leaf, flower	infusion	kidneys, urinary tract	used	aboveground parts with root	
Trifolium repens L., Fabaceae (KMSB 95071)	Bela detelina	0.04	aboveground parts, leaf, flower	infusion	kidneys, urinary tract	used	aboveground parts with root	
Tussilago farfara L., Asteraceae (KMSB 95072)	Podbel	0.05	aboveground parts, leaf, flower	infusion	cough, bronchitis, stomach ulcers, wounds, flu			
Urtica dioica L., Urticaceae (KMSB 95073)	Kopriva	0.34	root, aboveground parts with root, aboveground parts, leaf, flower, seed	infusion, fresh, mixed with honey	anaemia, blood cleansing, immune system, reducing blood pressure, to strengthen the hair, throat, tonsils, psoriasis, thyroid, rheumatic diseases, heart, blood condition, iron source	aboveground parts with potatoes and onions for pies and soups, as a food additive	aboveground parts	washing glassware , protecting plants against downy mildew, blight and insects, for hair washing
Vaccinium myrtillus L., Ericaceae (KMSB 95074)	Borovnica	0.38	root, aboveground parts, leaf, fruit	infusion, fresh	reducing blood sugar, diarrhoea, reducing blood pressure, blood vessels (anaemia), memory, stomach, liver (bile), hemorrhoids, inflammation of the gallbladder	fruit, juice, jam, liquer, syrup, Serbian delicacy *"slatko"*		
Verbascum densiflorum Bertol, Scrophulariaceae (KMSB 95075)	Divizma	0.02	aboveground parts	infusion	pain in the knees, ankles, rheumatic diseases, kidneys, joints, eject fluid			the flowers used for sunbathing
Viola odorata L., Violaceae (KMSB 95076)	Ljubičica	0.02	flower	oil extract	rheumatic problems, oil - rheumatism, joints	the flowers for making salads and jam		
Viola tricolor L., Violaceae (KMSB 95077)	Dan i noć	0.02	flower	infusion	capillaries, veins			

*RFC - relative frequency of citation index

Table 2. An ethnobotanical comparison of the results in this study and research performed in other areas of Serbia

Area	Year(s) when the studies conducted	No of plant taxa	No of medicinal taxa	No of taxa used in human nutrition	No of taxa used in veterinary medicine	No of taxa used in animal nutrition	No of taxa used in beliefs and contemplation	No of taxa used for other purposes	Plants from this study which overlap with plants from previous studies	Jaccard Index	References
Central Serbia	2002-2005	91	91	25	11	/	/	7	35	25.74	Jarić *et al*. 2007
South-Western Serbia	2010	62	62	5	3	/	/	8	29	25.66	Pieroni *et al*. 2011
South-Western Serbia	2013	69	69	3	/	/	/	/	37	33.04	Šavikin *et al.* 2013
Eastern Serbia	2011-2012	45	45	/	/	/	/	/	25	25	Zlatković *et al.* 2014
South-Eastern Serbia	2012-2014	137	128	43	5	/	/	16	51	30.72	Jarić *et al.* 2015
Eastern Serbia	2016	37	37	19	3	8	1	17	17	17.00	Janaćković *et al.* 2019
Eastern and South-Eastern Serbia	2015-2017	195	190	/	/	/	21	4	57	26.15	Matejić *et al.* 2020
South-Eastern Serbia	2015	85	/	/	/	/	/	/	32	24.06	Živković *et al.* 2020
Eastern Serbia	2017	192	/	/	46	/	/	/	20	19.05	Marković *et al.* 2021
Eastern Serbia	2019	114	100	37	14	6	17	24	42	27.63	Janaćković *et al.* 2022
Western Serbia	2015	80	74	39	2	21	/	13	80	100.00	Present study

CONCLUSION

Our study represents a contribution to the preservation of traditional botanical knowledge regarding the usage of wild plants by the local population on Mt. Tara, an area which is unexplored from the ethnobotanical point of view. Besides medicinal uses, we also documented a high number of food plants. The results of our study highlight the new usage of some well-known traditional plants in Serbia and the Balkans. In addition, the obtained data may serve as a guideline for finding new medicines. We consider that raising awareness on the traditional use of indigenous plant species through workshops, educational seminars and lectures will strongly contribute to the preservation of local knowledge.

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REZIME

Botanica SERBICA

Etnobotanička studija o upotrebi samoniklih biljaka sa planine Tare (zapadna Srbija)

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U ovoj studiji je prikazano etnobotaničko istraživanje u zapadnoj Srbiji (planina Tara) u cilju prikupljanja i očuvanja tradicionalnog botaničkog znanja. Grupa lokalnog stanovništva (56) intervjuisana je upotrebom polustrukturiranog intervjua. Izračunati su relativna učestalost citiranja (RFC) i Žakardov indeks (JI). Zabeleženo je 78 samoniklih vrsta iz 34 familije, od kojih su dominirale Rosaceae (41,18%), Asteraceae (23,53%) i Lamiaceae (20,59%). Od 78 zabeleženih vrsta, 70 vrsta (89,74%) se koriste u narodnoj medicini, 42 (53,85%) u ishrani ljudi, 22 (28,20%) u ishrani domaćih životinja, 14 (17,95%) vrsta se koriste u razne svrhe, dok se dve vrste (2,56%) koriste u etnoveterini. Najveći RFC zabeležen je za *Vaccinium myrtillus* (0,38), zatim za *Urtica dioica* (0.34) i *Hypericum perforatum* (0.25) i *Fragaria vesca* (0,25). Najčešći način pripreme biljnih preparata bio je infuz (70,51%), dok je najčešći upotrebljavan deo biljke bio list (56,41%), zatim cvet/cvasti (37,18%) i nadzemni delovi (28,21%). Najveći stepen sličnosti utvrđen je kod studija sprovedenih u neposrednoj blizini (planina Zlatibor, JI 33,04). Zabeleženi su lokalni recepti i nova upotreba nekih poznatih tradicionalno korišćenih biljaka u Srbiji i na Balkanu.

Ključne reči: Balkan, upotreba samoniklih biljaka, narodna medicina, ishrana ljudi i domaćih životinja, *Vaccinium myrtillus*

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