

Full Length Research Paper

Medicinal plants from an old Bulgarian medical book

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The aim of this study was to conduct an ethnobotanical research of old written sources which give information about medicinal plants and preparation of folk remedies for a particular historical period. The object of the present study is "Canon Prayer to St. Ivan Rilski and Medicinal Text" (1845) - a part of the Bulgarian early printed literature heritage. The 92 submitted recipes cover a wide range of illnesses and symptoms ranging from antiseptic to cures for neurological diseases. High species diversity of medicinal plants is represented in the book - most of them are vascular plants from 36 families (Leguminosae, Umbeliferae, Compositae, Zingiberaceae, Piperaceae, Myristicaceae, Lauraceae, Labiatae, Liliaceae, etc.) and 65 genera. The main components in written folk remedies are medicinal plants (more than 69), followed by the animals and animal products (20) such as honey, eggs, leeches, blood, musk, etc., mineral elements (sulphur (S), mercury (Hg), Au, gold (Au), iron (Fe)) and other organic and inorganic compounds (30). The significant participation of spices such as clove, cinnamon, mastic and ginger in folk remedies sheds new light on the list of species that are traditionally used in the folk medicine. The ethnobotanical study on this book, support the thesis that it was founded on authentic recipes from the healing activity of St. Ivan Rilski, which has increased its historical value a lot.

Key words: Ethnobotany, folk remedies, medicinal plants, old book, St. Ivan Rilski.

INTRODUCTION

Because of the recent trends to search for new medicinal plants and the rediscovery of alternative methods to treat diseases, the interest to all sources of popular knowledge concerning the folk medicine is expected and logical.

This trend in scientific studies is quite visible in many contemporary documents of world health organization (WHO) (Bodeker et al., 2005). In the recent years, a lot of ethnobotanical investigations were aimed at collecting, analyzing and systematizing the accumulated traditional folk knowledge (Hatfield, 2004). The methods applied mainly by conducting interviews in different regions of the world are followed by modern quantitative and numerical analysis. The number of these studies has increased in Europe and in particular in the Balkan region (Redzic, 2009; Santayana et al., 2010; Dogan et al., 2011). Bulgarians have been using herbal medicine to treat some common diseases for centuries. The empirical data of medicinal plants and traditional herbal drugs is passed on from one generation to another as oral folklore and

only little part of it can be found in written texts - manuscripts or herbal books. Most of them are well preserved and recorded with regard to the responsibility to keep the national traditional knowledge (Balan, 1909; Pogorelov, 1923; Stoyanov, 1957-1959; Petkanova, 2003).

Written historical records are documentary sources with greater degree of reliability of the information. They provide data which summarizes the folklore experience of many generations. A good example in that regard is the study of the works of Cervantes with references to plants, plant communities, and products (Santayana et al., 2006). Almanacs, orthodox books, books with herbal recipes and books of domestic medicine abundant during the XIX century were a mix of officinal and folk medicine. Some ethnobotanical and ethnopharmacological studies have focused on written documents - historical documents, herbal books, literature, etc. (Richmond et al., 2003; Santayana et al., 2006; Quave et al., 2008;

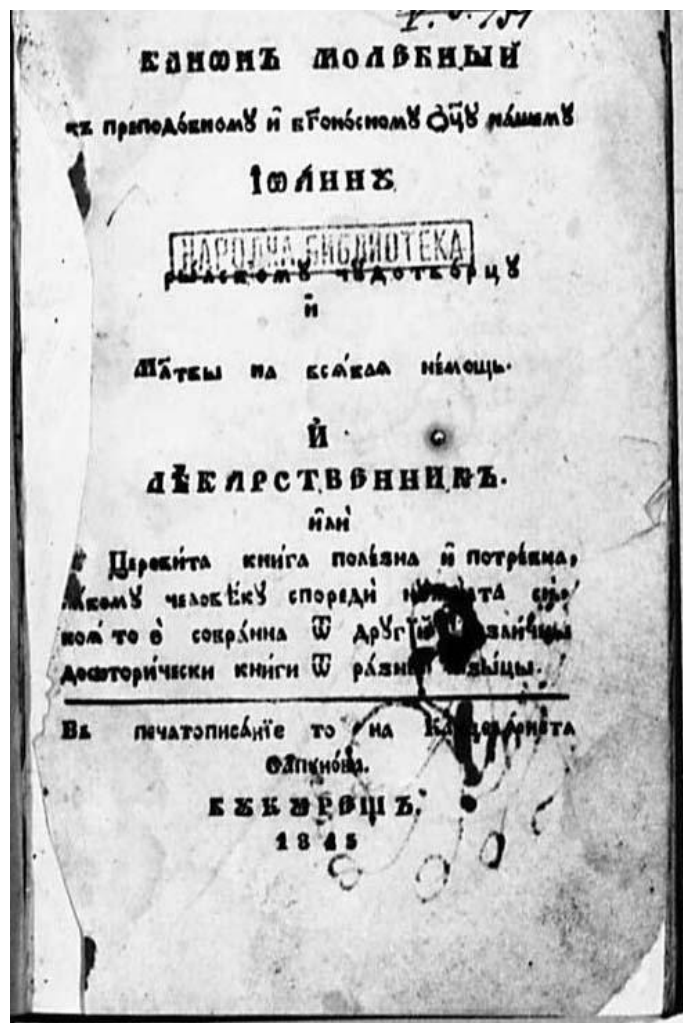


Figure 1. The first page of the book.

Leonti et al., 2009). The Bulgarian ethnobotanical literature generally neglected the oldest text documents related to Bulgarian herbal history (Ahtarov et al., 1939; Stojanov and Kitanov, 1960; Vakarelski, 1977, Petkov, 1982; Ivancheva and Stancheva, 2000; Leporatti and Ivancheva, 2003; Ploetz and Orr, 2004; Nedelcheva and Dogan, 2009).

The aim of this study was to conduct an ethnobotanical research of old written sources which give information about medicinal plants and preparation of folk remedies for a particular historical period. The research was focused on the medicinal plant identification, the determination of species' richness and diversity, and the analysis of the level of herbal folk knowledge. One of its purposes was to show features of historical printed sources as well as to reveal the possibilities of analysis that the collected information provides.

MATERIALS AND METHODS

The object of the present study is "Canon Prayer to St. Ivan Rilski and Medicinal Text" (1845), (P. Sapunov Publ., Bucharest, 65 pp). Figure 1 - a part of the Bulgarian early printed literature heritage (Balan, 1909; Pogorelov, 1923; Stoyanov, 1957-1959). Written in Old Church Slavonic language by an anonymous author, the book contains three main parts: 1) "Canon-prayer", 2) "Prayer to St. Ivan Rilski" and 3) Folk remedies. According to Balan (1909), the presumed author of the manuscript from which he made the printed edition is Neofit Rilski (a 19th-century Bulgarian monk, teacher and artist, and an important figure of the Bulgarian National Renaissance). The printed edition of this book is stored in the fund for old, rare and valuable books on St. St. Cyril and Methodius National Library, Sofia.

Why this book?

The book is one of the oldest written documental sources with traditional herbal remedies. "Lekarstvenik" (in Bulgarian) means book with collection of folk recipes and home remedies (medicinal text) (Figure 1). The texts that it contains are much more than a catalog of natural cures.

The book is dedicated to St. Ivan Rilski (876 - circa 946) - the first Bulgarian hermit. Today he is honoured as the patron of the Bulgarian people and one of the most important saints of the Bulgarian Orthodox Church. St. Ivan Rilski is also legendary known to have performed a multitude of miracles in order to help people heal of illnesses and infirmities (Duichev, 1947; Pulos, 1992; Bayramova, 1997). The few data about herbs, remedies, etc. that he used has been found until now (Stranski, 1953; Nedelcheva, 2009).

The book chosen for the subject of this study relates to several specific time periods: 1) The period of the creation and the implementation of the recipes - the most active years of St. Ivan Rilski during the reign of Tsar Peter I (927-969); 2) The period of the storage and transmission (it continued about 900 years); 3) The period of creating a written document (around 1827) (the activity of N. Rilski as a scholar in Rila Monastery); 4) The period of printed book (1845).

The book is one of the oldest catalogues of natural cures in Bulgaria and consists of 92 folk remedies, used in wide spectra of health problems. The feature for each remedy describes the kind of disorders it is intended for, its ingredients, the order of preparation and some instructions for use (Figure 2).

The herbs are mentioned with their vernacular names. The identification of the plants on these folk names is a major problem because nowadays most of them are old and unknown or with very limited use. The plants were identified according to their scientific (Latin) names in the medicinal and botanical books of that time (Pirovo, 1854), classical Bulgarian ethnobotanical sources (Ahtarov et al., 1939; Stojanov and Kitanov, 1960; Stranski, 1963) and modern ethnobotanical databases and glossaries (Katzner, 2011). The information set out in any written source is directly connected to a region characterized by geographical, ethnic and social features.

Study area

Bulgaria is a country in the Balkans in south-eastern Europe. It borders five other states: Romania to the north (mostly along the River Danube), Serbia and the Republic of Macedonia to the west,

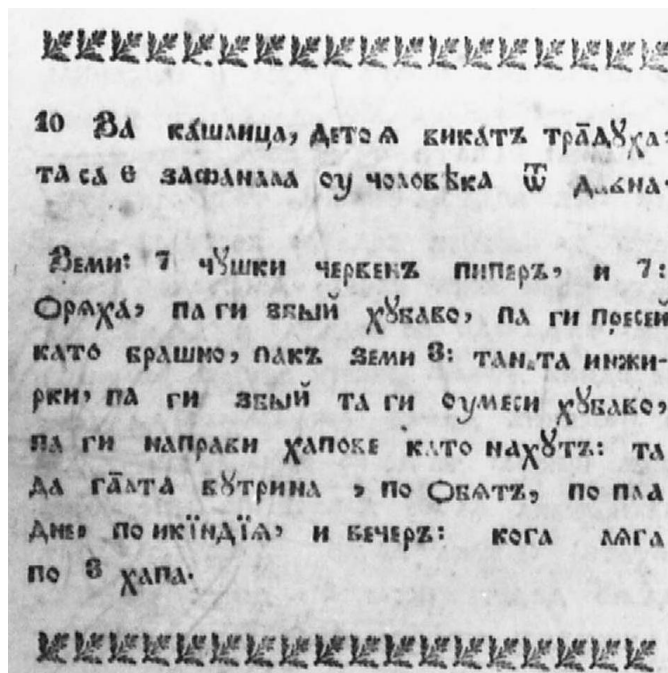


Figure 2. The recipe № 10 demonstrated the structure of the folk remedies description.

and Greece and Turkey to the south. The Black Sea defines the extent of the country to the east (42°41'0"N and 23°19'0"E). Phytogeographically, Bulgaria straddles the Illyrian and Euxinian provinces of the Circumboreal region within the Boreal kingdom. The territory of Bulgaria can be subdivided into two main ecoregions: the Balkan mixed forests and Rhodope Mountain mixed forests. Small parts of other four ecoregions are also present in the Bulgarian territory. Bulgarian flora comprises 159 families, 906 genera and 3900 species, of which 12.8% are endemics, 750 medicinal plants, 300 medicinal plants gathered yearly and 200 in active use (Petrova 2005; Petrova and Vladimirov, 2009).

Bulgaria's population consists mainly of ethnic Bulgarians (83.9%), with two sizable minorities, Turks (9.4%) and Roma (4.7%), (NSI, 2011). The official language is Bulgarian (written in Cyrillic alphabet), a member of the Slavic linguistic group.

The plant nomenclature is given according to Flora Europaea (Tutin, 1964-1993).

RESULTS

The third part of the printed edition of the book (3 Folk remedies) contains 92 recipes which are not arranged thematically. The recipes are graphically separated by a plant ornamental frieze (Figure 2).

Structure of the recipes

Each recipe is numbered with Arabic numerals. The titles

of the recipes are a little long. They are often very descriptive and pictorial and incorporate sounds, events and feelings associated with certain symptoms. At the beginning of the recipe the people can find the ingredients and their quantity, the order in which they should be placed, and a clear indication of storage and intake well as the amount and the duration (Figure 2).

Unit

The units are usually expressed in grams, and measures as "oka" and "denk" (water, honey) are used. Oka is an Ottoman measure of mass of weight equal to 1.28 kg. Denk means 'number of fruits'(7 red peppers). In very rare cases the book indicates the amount of money for which one should buy the component (take chickpea for 10 "para" (old coins).

Mode of preparation

The author gives instructions for the temperature (testing the temperature of the water using the finger) and detailed and coherent explanation of the process of mixing the ingredients. Techniques such as cooking to reduce the amount of the fluid on half, boiling so that the consistency can become mushy, filtration through a cloth,

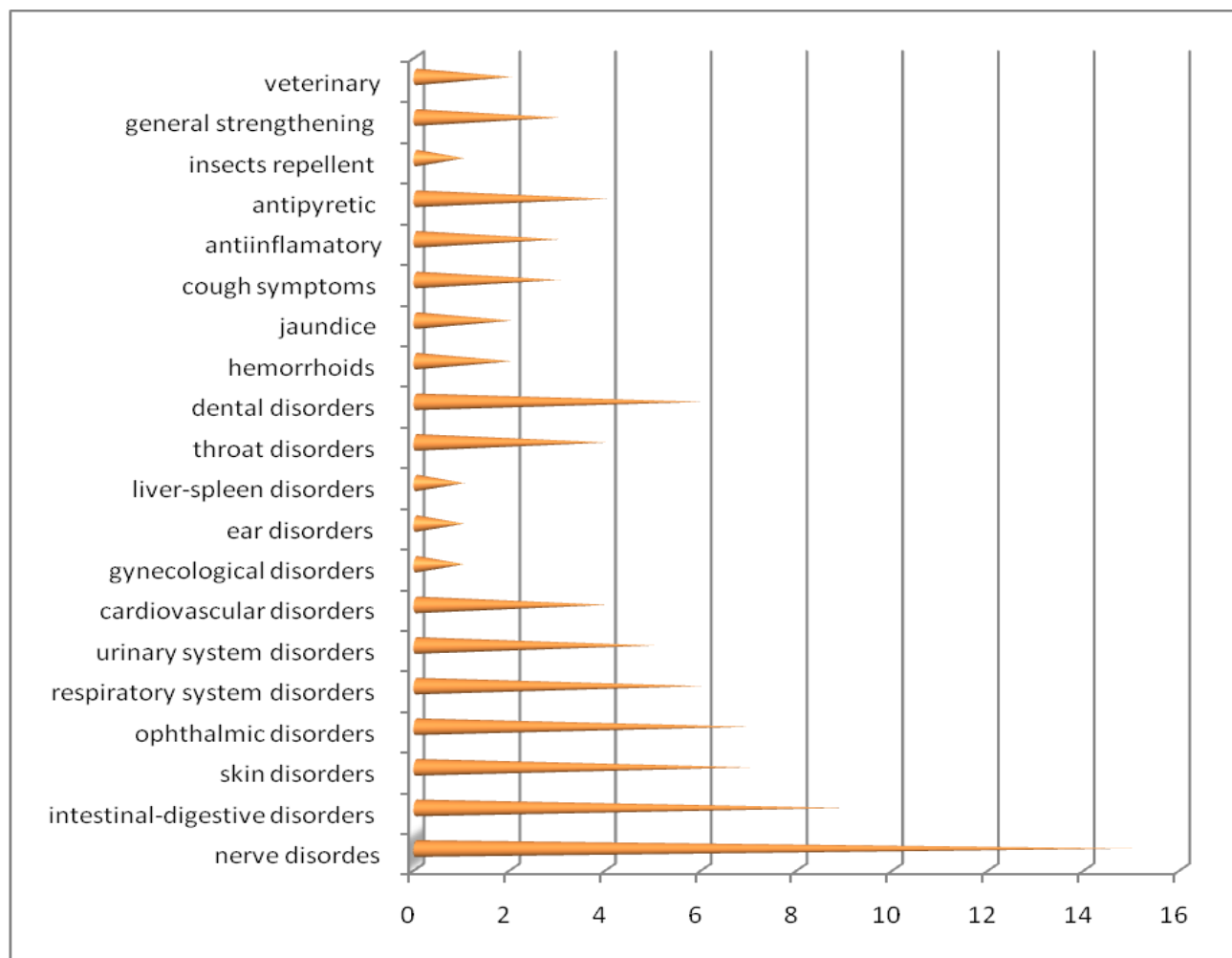


Figure 3. The most widely included in book system disorders according to the number of recipes.

sieving, shaking, thickening with flour, frying, “frying” in wine, etc. are used. For internal use in most recipes are prepared pills. The most commonly used fillers are flour or batter and it is indicated that the pills should be with the size of a chickpeas.

A lot of the remedies contain honey as a base and healing ingredient. These are mainly herbal pastes for internal administration, but there are some for external use as well. Honey is first heated and then added to the rest of the ingredients. This description is in accordance with the modern researches on honey and its properties during thermal processing (Turhan et al., 2008). In many cases it is recommended to add "margarit" (pearls) to facilitate the mixing to homogenization. Some instructions are given for the storage of the medicine: to stand for several days before use, to be kept tightly closed in a cool, dark place, etc.

Mode of use

In several places in the book an accompanying diet is recommended which prescribes abstinence from salty, sour and spicy food and alcohol in cases of skin diseases and an infectious disease (jaundice). Vegetarian diet is recommended too. Each recipe ends with a detailed indication of when and how to apply the medicine.

Disorders

The 92 submitted recipes cover a wide range of illnesses and symptoms ranging from antiseptic to cures for neurological diseases (Figure 3).

In many of the titles of the recipes a symptom called “stitch” is noted, which is a popular name for a pain of

uncertain origin. Its intensity is graded - for example, one of the grades is "... cannot be tolerated". On this basis in the study a group of pain relievers (15) has been separated. This significant group of recipes (15) specifies descriptive symptoms that may be associated with the occurrence of different types of pain caused by various reasons. It is therefore logical and explicable that they represent 16.3% of all prescriptions. The largest numbers of recipes are those concerning *Nerve disorders* (15) such as headache (6), disorders associated with dizziness and procrastination of the head. Others are focused on getting seizures and treating insomnia and fear. Prescriptions for headache were based mainly on herbs, and most of them are for external use - acting as a local analgesic. One of them is a herbal paste taken internally and another - of unknown composition - is snorted as snuff. Two consecutive recipes in the text refer to occurrence of seizures with different frequency. The first is addressed to seizures once a month and the second - "when a man collapses rarely in the year, but not every month". In the first case it is recommended to be treated burned swallowtail chapter (of the same sex as the patient). The ash is sanctified repeatedly and is then placed into the drink water from a spring and Myron (holy oil) is added. This is the only recipe in which a ritual is included. In the latter case, the brain of a badger is mixed with butter and pills are produced.

"When humans are frightened" and "when a man is frightened in a dream" are two recipes related to the treatment of fear. The description of the first is unclear, because of damage to the page of the book, but apparently it involves more inorganic substances. The second consists entirely of herbal pasta and is combined with swallowing a fulminatory bullet. "Sleep Balm" is made mainly of herbs. In it and in several other remedies opium poppy (seeds) is included which has a sedative effect.

Analysis of the prescriptions associated with nerve disorders is important because the "Lives of St. Ivan Rilski" mainly focus on treatment of fear, madness, stuttering and alike (Duichev, 1947; Pulos, 1992; Bayramova, 1997). Some of the famous paintings of the Saint focus exactly on his talent of a healer (Figure 4). The fact that these recipes occupy a large proportion of the book and with their rational nature of formulation and implementation are the main arguments in support of the presumption that the text is drawn after the recipes associated with the healing activity of the Saint. The large proportion of the cures of disorders is for the digestive system and intestinal-digestive disorders (9) - these are mainly stomachache, diarrhea and constipation. Other prescriptions concern the treatment of diseases with symptoms that impede the daily life of the people and are assumed to be common - skin disorders (7), ophthalmic disorders (7), respiratory system disorders (6), dental

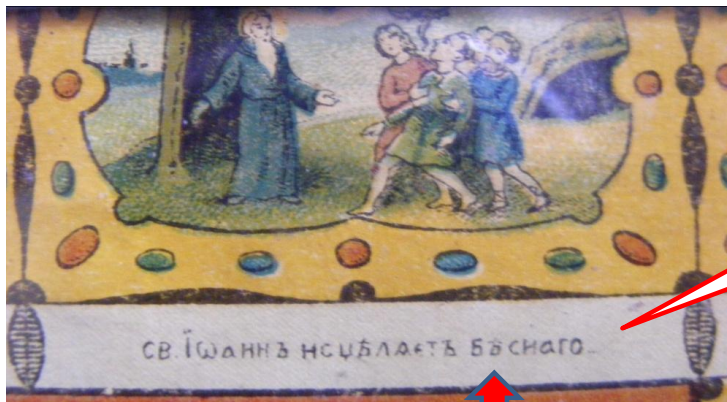
disorders (6), and urinary system disorders (5). Ways to alleviate the symptoms of cardiovascular disorders (4), gynecological disorders (1), ear disorders (1), liver-spleen disorders (1), throat disorders (4), hemorrhoids (2) and cough symptoms (3) are also included. Several of the recipes are compound recipes (for more than one disease or symptoms). Some of the remedies and procedures described in them are focusing on anti-inflammatory (antiseptic) (3), antipyretic (4) and insects' repellent (1) action. Three of the recipes are oriented generally on strengthening the body after a serious illness or fatigue - herbal pastes with a general strengthening effect (immune supporter) (3). In the book there are two recipes related to the treatment of jaundice (2) showing the importance of this disease, as the period during which the recipes were created and the time at which the book was published, nearly 10 centuries ago, was manifestly plagued by significant for the society outbreaks of jaundice. The special significance of the horse in the life of the people as transport and power is evident from both veterinary prescriptions (horse skin and urinary diseases) (2).

Ingredients

Constituents (with repetitions) of the recipes are totally 480. The average number of the components of a recipe is 5-6, with the minimum being 1 and the maximum - 17. Eighty-five of all prescriptions contain plants in its composition. Herbal ingredients are marked a total of 309 times. One of them contain only one plant, the average number of plant ingredients is 3-4 and mostly up to 5 in the final product. The remedies with general strengthening action on the basis of honey have the highest number of herbal ingredients.

The main components in written folk remedies are medicinal plants (146), followed by the animals and animal products (20) such as honey, eggs, leeches, blood, musk, etc., mineral elements (sulphur (S), mercury (Hg), gold (Au), iron (Fe)) and other organic and inorganic compounds (30).

The basis for the preparation of remedies is often honey and sheep fat, as well as eggs, blood, musk, etc. Interestingly, along with the use of wild animals such as eagle, swallow, jackdaw, magpie, turtle, trout, leeches, crabs, tadpoles, there is a single mention of use of bone marrow from tibia of horse, bovine testes and bile from a goat ling. The use of animals (meat from their bodies) made it clear that the women should be treated with female animals and men - with male animals. Very often in folk remedies there are mineral elements such as sulfur, mercury, gold, ferrum and some appear as the main constituent. Some common compounds are silver nitrate (AgNO_3), alum, naphtha, cinder, asphalt,



St. Ivan Rilski heal person with rabies.

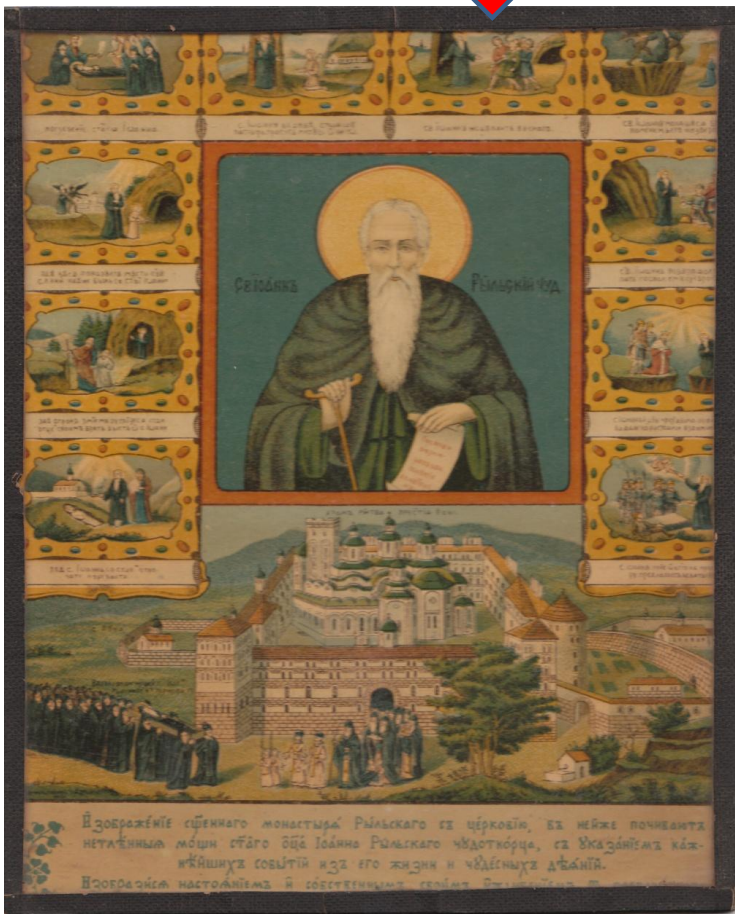


Figure 4. Lithographic print "St. Ivan Rilski and his Monastery" 1866.

gunpowder, glaze, citric acid and plant and animal products such as amber, wax, coal, mastic (plant resin), pearls, Gummi Arabica, treacle, egg albumen and yolk, brandy, red wine, sugar, yogurt, vinegar, salt, butter and camphor. From the first to the last prescription the ingredients are of the same "list" and are found in various

combinations, thus showing the unity of the source.

Plants

High species diversity of medicinal plants is represented

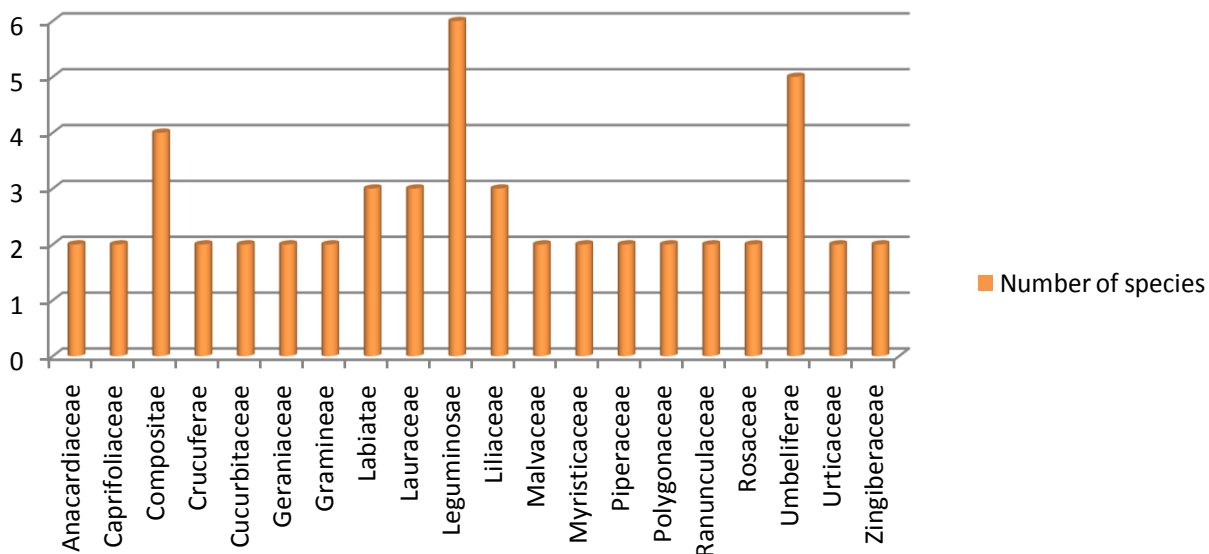


Figure 5. The systematic structure of medicinal plants represented in the book.

in the book - most of them are vascular plants from 36 families and 65 genera. The predominant numbers of species (and the most notable ones) are from Leguminosae, Umbeliferaceae, Compositae, Zingiberaceae, Piperaceae, Myristicaceae, Lauraceae, Labiatae, Liliaceae, etc. families (Figure 5). Thirty-three plant species mentioned in the text are representatives of the Bulgarian flora, others were subject to cultivation during the historical period, but no small part were spices and raw materials imported from Middle Eastern markets. In Table 1, sixty-nine species are included which are clearly identified in the studied text.

DISCUSSION

Most of the plants are naturally distributed species in the Bulgarian flora (50.7%). Large part of them is known by the population as food and 20.3% are cultivated. The second largest group is the species used as spices (24.6%). Many plants have been cultivated as ornamental in the courtyards of buildings (10.1%), but there are also weed and ruderal species included (6%) (Figure 6). It is noteworthy to avoid poisonous plants. Even when using the fruits of the elder, they should be ripe. This corresponds to the phytochemical data showing the presence of toxic substances in the unripe fruits of this plant. It is well known that the green berries are toxic.

Descriptions rarely specify what part of the plant should be used (in less than 10%). The explanation for this may be the widespread use of herbs i.e. perceived as

something that does not call into question which part of the plant is used. Contrary to this, "roots of nettles" is clearly specified, because seeds may be used too; "roots of elder", because its flowers and fruit are the more often used parts, melon seed (commonly known as fruit for food) and others.

Chickpea (*Cicer arietinum*) is mentioned in four recipes. In some cases it is difficult to assess whether it is the basis of a drug or it just adds healing properties when combined with other herbs. The constant comparing of the size of the pills to the size of chickpeas shows that people knew well this plant and that it was widely used in everyday life. "Nahut" is the standard measure for the preparation of the pills. Chickpea was studied for its appearance in archaeobotanical records from this region by Marinova and Popova (2008) and Marinova (2009). According to the results the occurrence of the chickpea only for a short period of time around the end of the Bulgarian early Neolith and at the beginning of the middle Neolith, as well as during the late Chalcolith, supports the suggestion that the chickpea was mostly a weed. It might have been imported with other crops during more intense contacts with Anatolia during these periods.

Although rock rose (*Cistus ladaniferus*) is associated with religious rituals in the Orthodox Christianity, here it is mentioned only as an integral part of biologically active action. This plant is widely used in herbal medicine around the world as anti-diarrheal, antacid and antispasmodic as visible from many ethnobotanical works. Essential oil been shown to exhibit antifungal and antibacterial effect (Aziz et al., 2006).

Table 1. List of plants included in folk remedies from the book

Scientific name	Family	Local name	Type	Part used	Mode of administration
<i>Cotinus coggygria</i> Scop.	Anacardiaceae	tekla	W	shoot	diarrhea; crushed and boiled in water : pain in the gums; boil in vinegar; liquid used for gargling
<i>Pistacia lentiscus</i> L.	Anacardiaceae	bial sakaz	I	plant resin	: difficulty urinating; mix and boil in water : purgative; herbal pasta based on honey : in fart a lot; herbal pasta based on honey. Diet. : in jaundice; herbal pasta based on honey : for problems in heart, eyes and ears : wound healing; ointment based on butter : in distress; herbal pasta based on honey : for wounds; ointment based on olive oil and butter : accidental urinating; compress
<i>Cocos nucifera</i> L.	Arecaceae	izistan zhevizi	S, I	nut	general strengthening; herbal pasta based on honey : cough with bloody secretions; based on red wine : in fart a lot; herbal pasta based on honey. Diet. : back pain; compress of herbs and cooked meat from eagle : in jaundice; herbal pasta based on honey 79: in difficult sleeping; mixture based on brandy
<i>Alkanna tinctoria</i> (L.) Tausch	Boraginaceae	aivazhiva	W	root	: wound healing; ointment based on butter
<i>Sambucus nigra</i> L.	Caprifoliaceae	svirchov lek	W	flower root fruit	fever; based on sugar syrup a: scabies skin infection; boil in water : in fart a lot; herbal pasta based on honey. Diet.
<i>Sambucus ebulus</i> L.	Caprifoliaceae	bazei	W	matured fruit	: in fart a lot; herbal pasta based on honey. Diet.
<i>Cistus landaniferus</i> L.	Cistaceae	tamian	R, I	leaf, oil	: purgative; herbal pasta based on honey : in fart a lot; herbal pasta based on honey. Diet. : in eye secretion; ointment based on olive oil, honey and flour : in blocked ear; water based liquid for ear lavage. Diet. : for wounds; ointment based on olive oil and butter : strong headache; compress based on rose oil
<i>Artemisia</i> spp.	Compositae	pelin	W	aerial part	: general strengthening; mixture based on vinegar. The same recipe is recommended for making beverages "pelinash", which uses red wine basis. : headache; compress based on brandy
<i>Artemisia alba</i> Turra	Compositae	bozhie darvo	W	aerial part	: general strengthening; mixture based on vinegar : headache; compress based on brandy

Table 1. Contd.

<i>Tanacetum balsamita</i> L.	Compositae	kalofer	C	leaf	: general strengthening; mixture based on vinegar
<i>Tanacetum vulgare</i> L.	Compositae	vratiga	W	corymb	: general strengthening; mixture based on vinegar
<i>Sinapis nigra</i> L.	Cruciferae	cheren sinap	W	seed	: pain (stitch one the body); mix with honey and prepare compress. The place in advance is smeared with olive oil. Stand for 24 hours. : joint pain; the seed is mixed with strained yogurt and prepare compress. Stand for 24 hours. : headache; crushed herbs and mixed with brandy; compress on the forehead b: general strengthening, in the beginning of the cold symptoms; mixture based on olive oil and vinegar
<i>Citrullus lanatus</i> (Thunb.) Matsum. & Nakai.	Cucurbitaceae	libenitsa, dinia	F, C	fruit	: fever; watermelon is baked in an oven. Crust is smeared all over body and sweating. : in eye edem; compress for a night on the shaved head
<i>Cucumis melo</i> L.	Cucurbitaceae	pipon	F, C	seed	: difficulty urinating; sugar syrup
<i>Quercus</i> spp.	Fagaceae	shikalki	W	gallae	: in fart a lot; herbal pasta based on honey. Diet.
<i>Geranium</i> spp.	Geraniaceae	zdravets	W	root	: headache; compress based on brandy
<i>Pelargonium roseum</i> Willd.	Geraniaceae	indrishak	W	leaf	: heart arrhythmia; in red wine
<i>Cynodon dactylon</i> (L.) Pers.	Gramineae	troskot	W	rhizome	39: in edem; pasta based on butter and treacle; compress is changing 2 hour.
<i>Hordeum vulgare</i> L.	Gramineae	echemik	F, C	grain	: difficulty urinating; mix and boil in water : spider bites; barley flour mixed with egg yolk to the dough; ointment.
<i>Aesculus hippocastanum</i> L.	Hippocastanaceae	at kestene	W	seed	: in jaundice; herbal pasta based on honey
<i>Crocus sativus</i> L.	Iridaceae	shafran	W, I	anther pollen	: for heart problems and stomach ache; balsam based on brandy : eye pain and secretion; compress based on alcohol
<i>Juglans regia</i> L.	Juglandaceae	oreh	W	seed	: cough; crushed and mixed; shaped as pills b: scabies skin infection; fresh chopped; ointment. Diet.
<i>Mentha spicata</i> L.	Labiatae	nane, dzhodzhen, giuzum	C	leaf	: general strengthening; mixture based on vinegar : a swollen lips; compress with honey based on leaf of cabbage
<i>Ocimum basilicum</i> L.	Labiatae	bosilek	W	aerial part	: general strengthening; mixture based on vinegar
<i>Salvia officinalis</i> L.	Labiatae	kakule	W	leaf	: headache; herbal pasta based on honey
<i>Cinnamomum camphora</i> L.	Lauraceae	kamphor	S, I	oil	cough; mixture based on water

Table 1. Contd.

<i>Cinnamomum verum</i> J. Presl.	Lauraceae	kanela	S, I	inner bark	general strengthening; herbal pasta based on honey cough; mixture based on water : to improve voice; boil in red wine and sweetened with honey : pain in heart area; mix based on brandy. Diet. : in fart a lot; herbal pasta based on honey. Diet. 40: back pain; compress of herbs and cooked meat from eagle : cracking of skin, wounds; mixture based on olive oil : headache; crushed herbs and mixed with brandy; compress on the forehead
<i>Laurus nobilis</i> L.	Lauraceae	dafinov list	S, I	leaf	: for heart problems and stomach ache; balsam based on brandy
<i>Cassia acutifolia</i> Delile	Leguminosae	silimakia	I	root	: difficulty urinating; mix and boil in water
				leaf	: purgative; herbal pasta based on honey
				fruit	: in fart a lot; herbal pasta based on honey. Diet. : in the cold of feed; brandy compress based on rabbit skin
<i>Astragalus</i> spp.	Leguminosae	klinavche	W	seed	: in fart a lot; herbal pasta based on honey. Diet.
<i>Cicer arietinum</i> L.	Leguminosae	leblebia, nahut	F, I	seed	: back pain; boil in water; compress for 24 hours : chest pain; herbal pills based on dough. Diet. : in the cold of back; herbal pills based on dough : strong headache; compress based on rose oil
<i>Glycyrrhiza glabra</i> L.	Leguminosae	sladak koren	W	root	cough; mixture based on water cough; herbal pasta based on honey : bleeding in the eye; compress on neck area
<i>Phaseolus vulgaris</i> L.	Leguminosae	bob	F, C	seed	: back pain; boil in water; compress for 24 hours : in eye edem; compress for a night on the shaved head
<i>Vicia faba</i> L.	Leguminosae	bakla	F, C	seed	: back pain; boil in water; compress for 24 hours
<i>Aloe</i> spp.	Liliaceae	sari sabur	O	leaf	general strengthening; herbal pasta based on honey stomach complaints and loss of appetite; pills based on dough : eye ache; based on red wine. Used as eye drops. Diet. : scabies skin infection; pills based on dough. Diet. : for heart problems and stomach ache; balsam based on brandy; : chest pain; herbal pills based on dough. Diet. : eye pain; compress based on rose oil
<i>Allium cepa</i> L.	Liliaceae	luk	F,C	bulb	b: scabies skin infection; fresh chopped; ointment. Diet. : gallbladder pain; fresh juice in water (red onion) : scabies skin infection; fresh chopped with sulfur; ointment

Table 1. Contd.

<i>Allium sativum</i> L.	Liliaceae	chesnov luk	F, C	bulb	11: general strengthening; mixture based on vinegar 21b: scabies skin infection; fresh chopped; ointment. Diet.
<i>Althaea officinalis</i> L.	Malvaceae	Biala ruzha	O, W	root	14: difficulty urinating; mix and boil in water
<i>Malva sylvestris</i>	Malvaceae	slez	O, W	leaf	67: in blocked ear; water based liquid for ear lavage. Diet.
<i>Ficus carica</i> L.	Moraceae	inzhirki	F, I	fruit	10: cough; crushed and mixed; shaped as pills 18: jaundice; based on vinegar. Eat macerated fruits.
<i>Myristica fragrans</i> Houtt.	Myristicaceae	pepase	S, I	nut	1: general strengthening; herbal pasta based on honey 23: headache; herbal pasta based on honey
<i>Syzigium aromaticum</i> (L.) Merr. & Perry	Myristicaceae	karamfil	S, I	flower bud	1: general strengthening; herbal pasta based on honey 4: cough; mixture based on water 6: fever; crushed and boiled in water 20: general strengthening; boil in water and sweetened with honey 23: headache; herbal pasta based on honey 52: a swollen lips; compress with honey based on leaf of cabbage 74a: general strengthening, in the beginning of the cold symptoms; mixture based on olive oil and vinegar 76: body pain; ointment based on honey 79: in difficult sleeping; mixture based on brandy 89: headache and toothache; compress, ointment 90: mouth sores; boil in vinegar; liquid used for gargling
<i>Papaver somniferum</i> L.	Papaveraceae	afion	O	seed	79: in difficult sleeping; mixture based on brandy 80: in distress; herbal pasta based on honey
<i>Pinus sylvestris</i> L.	Pinaceae	bial bor	W	sawdust plant resin	90: mouth sores; boil in vinegar; liquid used for gargling 91: bleeding and pain in the gums; boil in water; liquid used for gargling 77: wound healing; ointment based on butter 82: for wounds; ointment based on olive oil and butter 92: accidental urinating; compress
<i>Phytolacca decandra</i> L.	Phytolaccaceae	karmaza	O	root fruit	26: in distress; mixture based on water 31: general strengthening for baby; based on sheep fat; ointment
<i>Piper cubeba</i> L.	Piperaceae	kebabie	S, I	fruit	1: general strengthening; herbal pasta based on honey
<i>Piper nigrum</i> L.	Piperaceae	cher piper	S, I	fruit	4: cough; mixture based on water 31: general strengthening for baby; based on sheep fat; ointment 42: in the cold of feed; compress based on rabbit skin 76: body pain; ointment based on honey 89: headache and toothache; compress, ointment

Table 1. Contd.

<i>Rheum palmatum</i> L.	Polygonaceae	revent rosiiski	I	root	general strengthening; herbal pasta based on honey stomach complaints and loss of appetite; pills based on dough : in vomiting; pasta based on honey : in fart a lot; herbal pasta based on honey : in jaundice; herbal pasta based on honey
<i>Rheum rhaponticum</i> L.		revent	W	root	fever; based on sugar syrup : to improve voice; boil in red wine and sweetened with honey : for heart problems and stomach ache; balsam based on brandy : in jaundice; herbal pasta based on honey : in distress; herbal pasta based on honey
<i>Polypodium vulgare</i> L.	Polypodiaceae	sladka paprat	W	rhizome	: to improve voice; boil in red wine and sweetened with honey
<i>Clematis vitalba</i> L.	Ranunculaceae	povet	W	flower	: difficulty urinating; sugar syrup
<i>Nigella sativa</i> L.	Ranunculaceae	chere otu	S, W	seed	: purgative; herbal pasta based on honey : in vomiting; boil in water : headache and toothache; compress, ointment
<i>Cydonia oblonga</i> Mill.	Rosaceae	diulia	F, W	seed	: to improve voice; boil in red wine and sweetened with honey
<i>Rosa damascena</i> Mill.	Rosaceae	giul	O, C	rose oil	: general strengthening for baby; based on sheep fat; ointment : back pain; compress of herbs and cooked meat from eagle
<i>Citrus × limon</i> (L.) Burm.f	Rutaceae	limon	F, O, I	fruit	: in difficult sleeping; mixture based on brandy
<i>Digitalis lanata</i> Ehrh.	Scrophulariaceae	nezhitniche	W	root	: for problems in heart, eyes and ears
<i>Verbascum</i> spp.	Scrophulariaceae	ribe bile	W	leaf	: scabies skin infection; pills based on dough. Diet.
<i>Capsicum</i> spp.	Solanaceae	cherven piper, chushki	F, S, C	fruits	: cough; crushed and mixed; shaped as pills
<i>Camellia sinensis</i> (L.) Kuntze	Theaceae	chai	B, I	leaf	: general strengthening; mixture based on vinegar
<i>Angelica officinalis</i> Hoffm.	Umbeliferae	angelika	W	root	general strengthening; herbal pasta based on honey
<i>Anethum graveolens</i> L.	Umbeliferae	kopar	S, C	fruit	: to increase milk during lactation; herbal pasta based on honey and sug
<i>Foeniculum vulgare</i> Mill.	Umbeliferae	horezene	S, C	fruit	: purgative; herbal pasta based on honey
<i>Petroselinum crispum</i> (P.Mill.) Nyman ex A.W. Hill	Umbeliferae	magdanoz	S, C	root	: difficulty urinating; mix and boil in water
<i>Pimpinella anisum</i> L.	Umbeliferae	anason	S, W	fruit	general strengthening; herbal pasta based on honey : difficulty urinating; mix and boil in water : purgative; herbal pasta based on honey : headache; crushed herbs and mixed with brandy; compress on the for
<i>Urtica dioica</i> L.	Urticaceae	kopriva	F, W	root seed	: difficulty urinating; mix and boil in water : headache; herbal pasta based on honey

Table 1. Contd.

<i>Urtica urens</i> L.	Urticaceae	kopriva grachka	W	herba	fever; based on sugar syrup
<i>Curcuma zedoaria</i> L.	Zingiberaceae	zulumbat	S, I	rhizome	general strengthening; herbal pasta based on honey 2: stomach complaints and loss of appetite; pills based on dough : headache; herbal pasta based on honey : for heart problems and stomach ache; balsam based on brandy
<i>Zingiber officinale</i> Rosc.	Zingiberaceae	isiot, dzhindzhifil, darifilfil	S, I	rhizome	: headache; herbal pasta based on honey : purgative; herbal pasta based on honey : in fart a lot; herbal pasta based on honey. Diet. : in the cold of feed; compress based on rabbit skin : for problems in heart, eyes and ears : itchy skin on horse; mixture based on vinegar : body pain; ointment based on honey : in distress; herbal pasta based on honey : headache and toothache; compress, ointment : mouth sores; boil in vinegar; liquid used for gargling

W, Wild; S, spice; C, cultivated in Bulgaria; O, ornamental; F, food, I, import plant or plant product; R, plant with religious importance; B, beverage. Mode of administration (recipe number: symptoms; preparation; use, etc.).

Both species *Rheum palmatum* and *Rheum raponticum* (localized in Rila Mt.) are included in present recipes. The folk use of the second one is derived from the healing experience of the Rila Monastery monks and St. Ivan Rilski is the founder of Rila Monastery (Stranski, 1953; Nedelcheva, 2009). Plants used as spices are mainly biologically active components, but also determine the taste, aroma and colour of the final product. Among them are the most commonly used components in the folk remedies: clove (*Syzigium aromaticum*) - which has a very strong and distinct taste and flavor; mastic (*Pistacia lentiscus*) - specifically strong, slightly smoky, resin aroma, bitter and spicy taste, yellow colour; cinnamon (*Cinnamomum verum*) specifically aroma and spicy taste; ginger (*Zingiber officinale*)

with warming, sharp flavor and sharp taste, etc. All of them are well known in folk medicine in Europe and widely studied for their medicinal effect (Kwang-Geun and Takayuki, 2001; Dogan et al., 2004; Lev, 2006; Ayoola et al., 2008), as a natural dye sources (Dogan et al., 2003) and etc. Relatively less folk remedies contain onion (3) and garlic (2), which give sweet sour taste and strong specific flavor. This seems a bit strange if we bear in mind the significant role of these two plants in the diet of Bulgarians and their traditional use in the folk medicine. Peppermint is also not among the preferred flavors and ingredients. From the representatives of this genus only mint (2) is mentioned here, which is a widely used spice in the Bulgarian culinary traditions.

Some researches show that the links between

the taste perceptions and the medicinal uses of herbal drugs may be understood as bio-cultural phenomena rooted in the human physiology, and dependent on the individual experiences and culture (Pieroni and Torry, 2007). The established species that determine the taste of the medicines and are noted have been registered and investigated by the same authors. On the other hand, these results show that the relationships based on a source, referring to a particular historical period should be considered in its light. In the studied documentary source, traces of mysticism and superstition, which are an integral part of the folk medicine in the western countries (Europe) from this period, are not present. The made of amulets is not mentioned. As far as any visible impact here, it is from Arab and

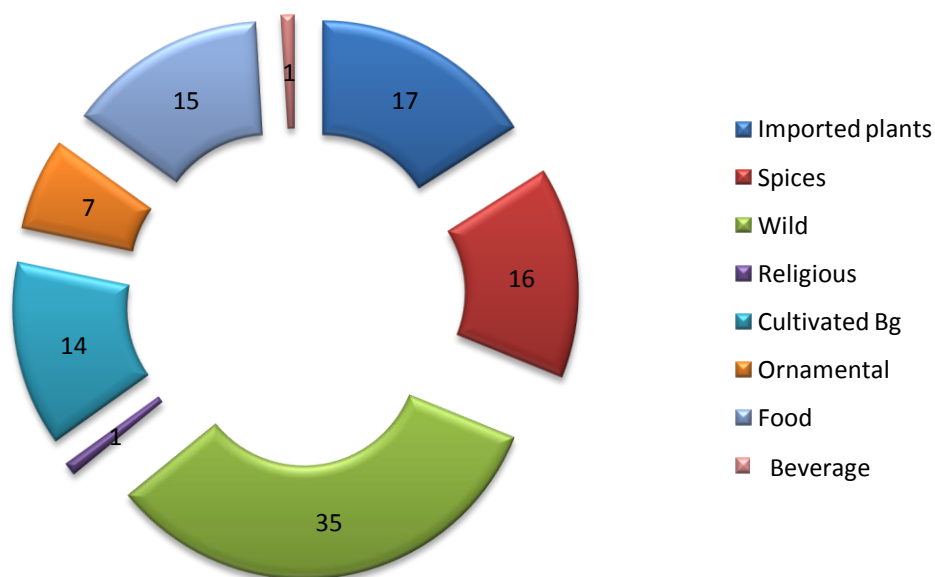


Figure 6. The plant biodiversity in folk remedies according to their general usage, distribution and economical importance.

Byzantine medicine. This confirms the opinion of many authors for the original and rational nature of the folk remedies from this period.

Conclusion

This study demonstrates how the old written sources can be used to collect information for: new medicinal plants and traditional folk remedies, historical information about the level of trade contacts and some socio-cultural processes in the society. The obtained data are analyzed by taking into account the historical fact regarding the period of the application of the treatment and the time of the creation and the printing of the text. Reading such a source is slow and requires multi-layered knowledge - botany, history and linguistics. The correct interpretation of the text requires knowledge of the relevant literature of the period such as "Lives of St. Ivan Rilski", herbal books, sources about trade contacts and plant cultivation, linguistic literature, language dictionaries (Turkish, Russian, and Serbian), etc.

This study contributes to the ethnobotanical studies in Bulgaria and on the Balkans, and presents data derived from a written source. The book "Cannon..." was first being studied to enlarge the knowledge of species used in the traditional medicine in the investigated period.

The wide variety of folk remedies including mainly plants, mineral elements and other organic and inorganic

ingredients found by the study is consistent with the results of other authors about the rich traditional knowledge and practice in relation to medicinal plants and folk medicine. The use of many wild species of the Bulgarian flora in the folk remedies is well known by all previous studies.

The significant participation of spices such as clove, cinnamon, mastic and ginger in folk remedies sheds new light on the list of species that are traditionally used in the folk medicine. The importance of these species, together with the presence of many organic and inorganic compounds, showed greater significance than previously suspected. The traditional use of medicinal plants is more precise and more oriented to the "East plants" than it was believed until now.

Last but not the least, the ethnobotanical study on this book and the presented results support the thesis that it was founded on authentic recipes from the healing activity of St. Ivan Rilski, which has increased its historical value a lot. Some data that can be used as a proof for the link between the text and the knowledge of St. Ivan Rilski (in hagiography) is as follows:

C. arietinum is the only plant that has been mentioned in various "Saint's Lives" as one used by the hermit. The same plant is a very common ingredient in recipes and is also used as a standard measure for the preparation of pills.

Both species *R. palmatum* and *R. raponticum* (localized in Rila Mt.) are included in present recipes. The folk use

of the second one is related to the healing experience of the Rila Monastery monks. St. Ivan Rilski is the founder of Rila Monastery.

St. Ivan Rilski is well known as a nerve disorders' healer - a fact that corresponds to the large number of remedies in text, aimed at curing this illness.

The ethnobotanical data is in accordance with the modern hagiographic concept that St. Ivan Rilski is a highly educated person (Pulos, 1992), which contradicts to traditional beliefs.

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