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Urban ethnobotany study in Samogitia region, Lithuania

Zivile Petkeviciute^{1,2*}, Nijole Savickiene³, Arunas Savickas¹, Jurga Bernatoniene¹, Zenona Simaitiene^{1,2}, Zenona Kalveniene¹, Andrius Pranskunas⁴, Robertas Lazauskas⁵ and Tauras Antanas Mekas^{1,2}

¹Department of Drugs Technology and Social Pharmacy, Kaunas University of Medicine, Lithuania.

²Museum of the History of Lithuania Medicine and Pharmacy, Lithuania.

³Department of Pharmacognosy, Kaunas University of Medicine, Lithuania.

⁴Kaunas University of Medicine Hospital, Lithuania.

⁵Department of Physiology, Kaunas University of Medicine, Kaunas, Lithuania.

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The urban ethnobotany study provides a generalized survey on ethnobotanical knowledge preserved in Samogitia (Lithuania) and on the practical application of this knowledge in modern therapy. We registered 113 medicinal plants from 57 plant families used for therapeutic purposes. The most commonly used families of medicinal plants were Asteraceae, Lamiaceae and Rosaceae and the most commonly used plants - *Calendula officinalis* L., *Vaccinium vitis-idaea* L., *Valeriana officinalis* L., *Hypericum perforatum* L., *Artemisia absinthium* L., *Symphytum officinale* L., *Quercus robur* L., *Populus x canescens* Aiton, *Anthemis tinctoria* E.C. Buxton, *Achillea millefolium* L., *Acorus calamus* L. and *Aesculus hippocastanum* L. Most commonly, medicinal plants were used for alimentary tract disorders (22%), disorders of the respiratory tract (20%), wounds, other traumas and bites (10%), renal and urinary tract disorders (10%), nervous and emotional disorders (9%). Despite easily accessible modern medical assistance, the inhabitants of the studied region were actively using their experience in traditional herbal medicine for primary healthcare.

Keys words: Medicinal plants, urban ethnobotany, Lithuania, Samogitia

INTRODUCTION

For millennia treatment with medicinal plants was the main - and sometimes the one and only therapy for people throughout the world. Therefore it is only natural that this treatment has been most widely studied - frequently via trial and error. Indeed, the history of treatment with medicinal plants (Western, Chinese, Auyrvedic or Tibetan) is also the history of Medicine. In 2003 the World Health Organization (WHO) calculated that over 80% of African population used traditional medicine for primary healthcare and the treatment with medicinal herbs comprises 30 - 50% of all used medications in China (O'Sullivan, 2005).

Many countries organize ethnobotanic expeditions for

gathering information about traditionally used medicinal plants with the aim of using this information for developing new pharmaceuticals (de Sousa Araujo et al., 2008; Gonzalez-Tejero et al., 2008; Leporatti and Impieri, 2007). Recently, many developing countries have engaged into studies of traditional medicine, devoting significant attention to migrant communities in industrialized countries (Pieroni and Giusti, 2008). However, Western Europe studies have been scarce in this field (Pieroni and Gray 2008; Pieroni et al., 2008). Information about medicinal plants traditionally used for therapeutic purposes is mainly deficient because archive material is not systematized and mostly presented in small ethnographic papers published in native languages (Luczaj and Szymanski, 2007). Researchers have been discussing about integration of traditional medicine into the public health system (Alves and Rosa, 2007), which would result the need on the accumulation, systematization and pre-

*Corresponding author. E-mail: z.petkeviciute@gmail.com.
Tel. +37061863403.

sentation of material on the traditional medicine to the wider audience.

The urban ethnobotanical study in Samogitia (Lithuania) presents a survey on the preserved knowledge of the local population and local herbal healers of a peculiar region about the usage of medicinal plants for therapeutic purposes and about their applicability in modern primary healthcare.

Study area

Lithuania is an European country on the Eastern coast of the Baltic Sea with the territory of 65,300 km². The climate is defined as moderately cold with snowy winters and significant precipitation during all seasons – especially during the warmer part of the year (Baltrunas et al., 2006).

The study was performed in the central part of Samogitia region located in the Western part of the country. This region has preserved Samogitian language and manners. The main location of the study was Varniai Urban reserve (142 ha) - small town Varniai and 5 villages near it. This area belongs to Varniai Regional Park created with the aim of preserving the landscape of the central lake and hilly territory, its natural ecosystem and its cultural heritage.

METHODOLOGY

The study was performed during 2005 - 2006 in Samogitia (Lithuania) using the conventional technique of ethnobotanical studies (Martin, 2004). 19 women and 1 man aged between 56 and 82 years were selected for the study using snowball techniques and were interviewed in depth about their homemade herbal medicines. Interviewed people were mainly the herbalists, farmers and housewives. The obtained information was recorded indicating ethnic names of plants, their preparation techniques, parts used, modes of administration and application for therapeutic purposes. Parts of plants were identified using writings on traditional Lithuanian flora (Jankeviciene, 1998; Ragazinskiene et al., 2005) and other additional literature (Blumenthal et al., 2000; Joseph and Margarethe, 1903). Folk names of local plants were identified using the rules of the Samogitian dialect.

RESULTS AND DISCUSSIONS

We registered 113 species of medicinal plants from 56 families used for therapeutic purposes. Medicinal plants species mentioned by more than 50% of respondents are presented in Table 1. On the average, each interviewed respondent named 23 species of medicinal plants indicated which parts of the plant they used, how they prepared them, what indications for use and modes of administration there were and presented compositions of medicinal plant mixtures.

The information gathered during the first year was specified the following year by consulting the respondents on requirement (mostly for identification of plant species). In order to specify ethnical names of the plants we returned

during the blossoming season or interviewed other respondents who knew more precise names of these plants. That indicated that the same plants were widely used for therapeutic purposes and were typical of this region. The inquiry was performed in the local Samogitian dialect, which was a major reason for the success of the study - this closed community was reluctant to accept strangers and highly values people who spoke the local dialect.

The disorders treated with medicinal plants were distributed into 15 indications groups (Figure 1). A separate group was composed of “magic” remedies or preparations for psychosomatic disorders, such as remedies protecting from the “evil eye”, “love potions”, etc.

The prevalence of plants families

During the interview the respondents mentioned 57 plants families that included 113 plants species. The plants species that were mentioned as the most commonly used for therapeutic purposes were those from the Asteraceae family (16 species), the Rosaceae family (9 species) and the Lamiaceae family (9 species). 39.5% of the mentioned medicinal plants were grown in gardens and 60.5% were gathered in their natural habitats. The plants that were grown in gardens were mostly vegetables and fruit also used in traditional food (garlic, onion, cabbage, beans, sunflowers etc.) as well as spices (oregano, parsley, caraway and dill). Other authors also indicated that medicinal and culinary use of medicinal plants is frequently concurrent (Luczaj and Szymanski, 2007; Pieroni and Gray, 2008).

The multiplex citation of respondents of certain species plants showed that the local population primarily used plants of the Asteraceae family for the treatment of various disorders. During the inquiry the species of this family were mentioned 104 times (21.9%). Species of other families were mentioned less frequently: Lamiaceae - 45 times (9.5%), Ericaceae - 25 times (5.3%), Rosaceae - 24 times (5.1%), Apiaceae - 20 times (4.2%) and Salicaceae - 16 times (3.4%). There were families from which only one species was mentioned, but it dominated during the inquiry - e.g. species from the Boraginaceae and the Fagaceae families were mentioned 11 times each (2.3%) and species from the Valerianaceae family - 12 times (2.5%). The number of times a specific plant was mentioned indicated how widely plants of a specific family were used for treatment because a single plant is not usually applied for one single disease, but it is rather used for several indications, as shown in Table 1.

Parts of plants and their preparation techniques

One should not only know which disease a specific plant can treat, but also which part of this plant is most suitable for this purpose. The local population mostly used herb

Table 1. List of commonly used medicinal plants species inventoried during the study.

Family	Botanical name	Disorder	Part used	Preparation	Administration and dosage*
Acoraceae	<i>Acorus calamus</i> L.	Gastric pain, indigestion, gastric ulcer	Roots	Powder	O.Ad., one teaspoonful of powder taken with cold water twice daily
Alliaceae	<i>Allium cepa</i> L.	Gastric distension, indigestion	Roots	Extract with alcohol	O.Ad., one teaspoonful once daily
		Cold	Corm	Juice	O.Ad., one teaspoonful of freshly pressed juice once daily
		Bronchitis	Corm	Decoction with honey	O.Ad., one cup in the evening
Alliaceae	<i>Allium sativum</i> L.	Insect bites and stings	Leaves	Juice	Ext., inunction
		Icterus	Leaves	Decoction	O.Ad. (mixture)
		Muscle and joint pain	Corm	Extract with alcohol	Ext., inunction
		Gastric pain	Corm	Extract with alcohol	O.Ad.
Apiaceae	<i>Anethum graveolens</i> L.	Respiratory tract disorders	Corm	Eating	O.Ad., one slice daily in cold weather for cold prevention
		Wounds	Corm	Juice	Ext., washes
		Difficult coughing	Fruits	Tea	O.Ad., one cup three times per day
Apiaceae	<i>Carum carvi</i> L.	Hypertension	Fruits	Infusion	O.Ad., one cup in the morning
		Indigestion	Fruits	Tea	O.Ad.
Asphodelaceae	<i>Aloe arborescens</i> Mill.	Indigestion, gastritis, gastric distension	Fruits	Tea	O.Ad.,
		Diarrhea	Fruits	Powder (ashes)	O.Ad., one teaspoonful of powder taken with water
		Cough	Leaves	Extract with alcohol	O.Ad., (mixture)
Asteraceae	<i>Achillea millefolium</i> L.	Gastric wounds	Leaves	Juice and pulp with honey	O.Ad., one teaspoonful three times per day
		Cough	Leaves	Juice and pulp with honey	O.Ad., one teaspoonful 3-4 times per day
		Tuberculosis	Leaves	Decoction with honey	O.Ad., (mixture)
		Disorders requiring blood cleaning, bleeding wounds	Flowers	Tea	O.Ad.
Asteraceae	<i>Anthemis tinctoria</i> L.	Diarrhea	Flowers	Tea	O.Ad., one cup per day
		Erysipelas	Flowers	Tea	O.Ad., (mixture)
		Painful menstruations, excessive bleeding	Flowers	Tea	O.Ad., (mixture)
		Scabies	Flowers	Tea	O.Ad.
		Bleeding wounds	Leaves	Juice	Ext., washes
Asteraceae	<i>Arctium lappa</i> L.	Hepatic stones, icterus, indigestion	Flowers	Tea	O.Ad., one cup three times per day
		Hepatic diseases	Flowers	Tea	O.Ad., (mixture) one cup three times per day for one year
Asteraceae	<i>Arctium lappa</i> L.	Pneumonia, bronchitis	Flowers	Tea	O.Ad., (mixture)
		Muscle and joint pain, wounds, insect bites and stings	Leaves	Compress	Ext.
		Biliary stones	Roots	Tea	O.Ad., one cup per day in case of seizures
		Oncology diseases	Roots	Tea	O.Ad.
		Fright	Roots	Tea	O.Ad., (mixture), one cup per day for one week

Table 1. Contd

Asteraceae	<i>Artemisia absinthium</i> L.	Hepatic diseases, Diarrhea , indigestion	Herb	Tea	O.Ad., not more than three cups per day for not longer than a week
Asteraceae	<i>Calendula officinalis</i> L.	Nervousness Oral ulcers Metritis, gynecological diseases Gastric and hepatic pain	Herb Flowers Flowers Flowers	Tea Tea Tea Tea, extract with alcohol	O.Ad. Ext., rinsing O.Ad., one cup three times per day O.Ad.
Asteraceae	<i>Taraxacum officinale</i> F. H. Wigg.	Wounds Cold, influenza Cystitis Oncology diseases Gastric and, hepatic diseases, biliary problems, anorexia	Leaves Flowers Flowers Flowers Roots	Compress Tea Tea Tea Tea	Ext. O.Ad., (mixture) O.Ad., (mixture) O.Ad., one cup daily O.Ad., one cup per day
Asteraceae	<i>Tussilago farfara</i> L.	Cough	Leaves, flowers	Tea	O.Ad., one tablespoonful per day
Asteraceae		Cold	Flowers	Tea	O.Ad., three times per day for not longer than a week
Betulaceae	<i>Betula pubescens</i> Ehrh.	Muscle pain	Leaves	Compress	O.Ad., (mixture)
		Hepatic diseases	Bud	Extract with alcohol	Ext., inunction
		Muscle pain	Bud	Extract with alcohol	O.Ad., one teaspoonful per day
		Gastric diseases, heartburn	Bud	Tea	Ext.
		Diarrhea	Bark	Tea	O.Ad.
		Wounds	Bud	Extract with alcohol	O.Ad., (mixture), one cup per day
		Epilepsy	Lichen	Tea	Ext., washes
Boraginaceae	<i>Symphytum officinale</i> L.	Contusion, bone pain	Roots	Tea, extract with alcohol	O.Ad., (mixture)
		Joint and bone pain	Roots	Extract with alcohol	O.Ad., tea - one cup per day, extract – several drops per day
		Joint and bone pain	Roots	Ointment	Ext., inunction
Cannabaceae	<i>Cannabis sativa</i> L.	Erysipelas	Flowers	Compress	Ext.
		Fright	Flowers	Tea	O.Ad., one cup per day for 3-4 days
		Erysipelas	Flowers	Tea	O.Ad., (mixture)
Cannabaceae	<i>Humulus lupulus</i> L.	Insomnia, anxiety	Fruits	Tea	O.Ad.
		Indigestion	Fruits	Tea	O.Ad.
		Influenza	Fruits	Tea	O.Ad., (mixture)
Cucurbitaceae	<i>Bryonia alba</i> L.	Contusion, bruises, bone cracks	Leaves	Compress	Ext.
		Contusion, bruises, bone cracks	Leaves	Tea, extract with alcohol	O.Ad., tea - one cup per day; extract – several drops per day
Cupressaceae	<i>Juniperus communis</i> L.	Anuria	Fruits	Tea	O.Ad.
		Used for air disinfection	Herb	Fumigation	Ext.
		Diseases of joints	Herb	Decoction	O.Ad.
Ericaceae	<i>Arctostaphylos uva-ursi</i> (L.) Spreng.	Cystitis and inflammation of the urinary tract	Leaves	Tea	O.Ad., one cup per day, for not longer than a week

Table 1. Contd

		Cystitis and inflammation of the urinary tract	Leaves	Tea	O.Ad., (mixture), one cup per day for not longer than a week
Ericaceae	<i>Oxycoccus palustris</i> Pers.	Cold	Fruits	Tea	O.Ad.
		Prostate problems	Fruits	Juice	O.Ad., one tablespoonful once daily
Ericaceae	<i>Vaccinium vitis-idaea</i> L.	Anuria, hypertension	Leaves	Tea	O.Ad., one cup per day
		Inflammation of the urinary tract	Leaves	Tea	O.Ad., (mixture), one cup per day for not longer than a week
Fagaceae	<i>Quercus robur</i> L.	Diarrhea	Bark	Tea	O.Ad.
		Wounds	Bark	Compress	Ext.
		Epilepsy	Bark	Tea	O.Ad., (mixture)
		Bleeding gums	Bark	Decoction	Ext.
Geraniaceae	<i>Pelargonium odoratissimum</i> (L.) L'Her.	Cough, bronchitis	Leaves	Tea	O.Ad., one cup once per day
Grossulariaceae	<i>Ribes uva-crispa</i> L.	Pneumonia	Leafy stem	Decoction	O.Ad., one cup 2-3 times per day
Hippocastanaceae	<i>Aesculus hippocastanum</i> L.	Varicose veins, muscle and joint pain	Fruits, flowers	Extract with alcohol	Ext.
		Hepatic diseases	Flowers	Tea	O.Ad., (mixture), one cup per day for one year
		Indigestion	Fruits	Powder	O.Ad., one teaspoonful; powder – three times per day
Hypericaceae	<i>Hypericum perforatum</i> L.	Hepatic diseases	Herb	Tea	O.Ad., (mixture), one cup per day for one year
		Gastric disorders	Herb	Tea	O.Ad.
		Wounds, hemorrhoids, intertrigo	Herb	Ointment	Ext., washes
		Muscle and joint pain	Flowers	Extract with alcohol	Ext., inunction
		Pneumonia	Herb	Tea	O.Ad., (mixture)
Lamiaceae	<i>Melissa officinalis</i> L.	Nervousness, insomnia, pain	Herb	Tea	O.Ad.
		Painful menstruations	Herb	Tea	O.Ad.
		Indigestion	Herb	Tea	O.Ad., (mixture)
		Influenza	Herb	Tea	O.Ad., (mixture)
Lamiaceae	<i>Mentha x piperita</i> L.	Hepatic diseases, indigestion	Herb	Extract with alcohol	O.Ad.
Lamiaceae	<i>Mentha spicata</i> L.	Indigestion, nervousness	Herb	Tea	O.Ad., one cup once per day
Lamiaceae	<i>Nepeta cataria</i> L.	Metritis, painful menstruations	Herb	Tea	O.Ad.
Lamiaceae	<i>Origanum vulgare</i> L.	Cough, cold	Herb	Tea	O.Ad., (mixture)
		Painful menstruations, blood loss	Herb	Tea	O.Ad., (mixture)
Lamiaceae	<i>Salvia officinalis</i> L.	Sore throat	Leaves	Tea	Ext., gargle
		Cough	Leaves, flowers	Extract with alcohol, tea	O.Ad.
		Cough	Leaves	Tea	O.Ad., (mixture)
Lamiaceae	<i>Thymus vulgaris</i> L.	Cold	Herb	Tea	O.Ad., (mixture)
		Influenza	Herb	Tea	O.Ad., (mixture)
		Cough, respiratory diseases	Herb	Tea	O.Ad., one cup three times per day

Table 1. Contd

Plantaginaceae	<i>Plantago major</i> L.	Gastric ulcers and wounds	Leaves, roots	Extract with alcohol	O.Ad.,
		Gastric and intestinal disorders, diarrhea	Leaves	Tea	O.Ad.
		Cough	Leaves	Tea	O.Ad., (mixture)
		Gastric hypoacidity	Leaves	Juice	O.Ad., one tablespoonful before meals three times per day for one month
Polygonaceae	<i>Bistorta major</i> Gray.	Wounds	Leaves	Compress	O.Ad.
		Oncology diseases, gastric diseases (diarrhea), hepatic problems	Roots	Extract with alcohol, decoction	O.Ad., one teaspoonful at 4 a.m. before breakfast
		Severe blood loss, painful menstruations	Roots	Tea	O.Ad., (mixture)
Polygonaceae	<i>Polygonum aviculare</i> L.	Severe diarrhea	Roots	Tea	O.Ad., (mixture)
		Hepatic stones	Herb	Tea	O.Ad., (mixture), one liter per day for half a year
		Renal stones, inflammation of the urinary tract, prostate disorders	Herb	Tea	O.Ad., one cup per day for half a year
Rosaceae	<i>Crataegus monogyna</i> Jacq.	Renal stones	Herb	Tea	O.Ad., (mixture)
		Cardiac diseases	Fruits	Extract with alcohol	O.Ad., one teaspoonful once daily
Rosaceae	<i>Filipendula ulmaria</i> (L.) Maxim.	Cough, pneumonia	Flowers	Tea	O.Ad.
Rosaceae	<i>Fragaria vesca</i> L.	hypovitaminosis, weak organism	Fruits	Tea	O.Ad.
		Influenza	Fruits	Tea	O.Ad., (mixture)
		Cystitis	Leaves	Tea	O.Ad., one cup three times per day
		Eczema	Young leaves	Ointment	Ext.
Rosaceae	<i>Sorbus aucuparia</i> L.	Constipation	Fruits	Tea	O.Ad., one cup per day
		Influenza, fever	Fruits	Juice	O.Ad.
Rutaceae	<i>Ruta graveolens</i> L.	Gastric hyperacidity	Fruits	Juice	O.Ad.
		Cystitis	Herb	Tea	O.Ad., (mixture)
		Cardiac diseases, Diarrhea	Herb	Tea	O.Ad.
Salicaceae	<i>Populus x canescens</i> (Aiton) Sm.	Used to induce abortion	Herb	Decoction	O.Ad.
		Wounds	Bud	Extract with alcohol, ointment	Ext.
Sambucaceae	<i>Sambucus nigra</i> L.	Cough	Fruits	Tea	O.Ad., (mixture) one cup per day for one week
		Pneumonia	Flowers	Tea	O.Ad., (mixture) one cup in the evening
Tiliaceae	<i>Tilia cordata</i> Mill.	Fever	Flowers	Tea	O.Ad., one cup once per day in the evening
Urticaceae	<i>Urtica dioica</i> L.	Influenza	Flowers	Tea	O.Ad., (mixture)
		Weak organism, anemia	Herb	Tea	O.Ad., one cup three times per day
Valerianaceae	<i>Valeriana officinalis</i> L.	Nervousness, insomnia, fright	Roots	Extract with alcohol, tea	O.Ad.

*O.Ad. - oral administration, Ext. - external use

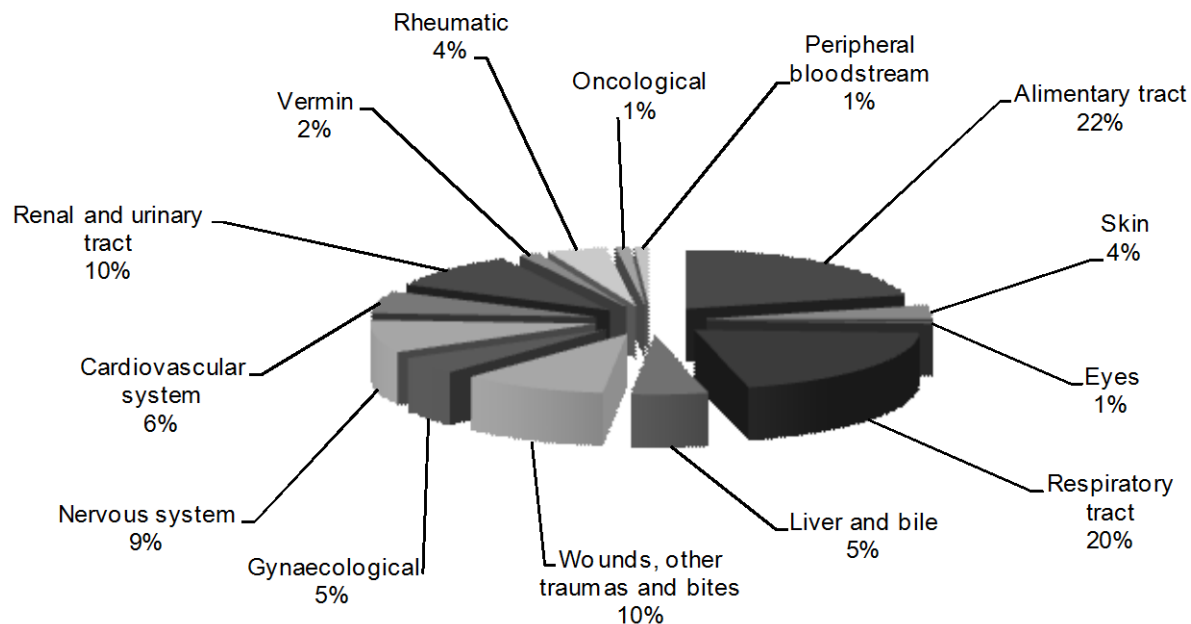


Figure 1. Distribution of diseases treated by applying traditional herbal medicine.

(mentioned 23.1%), blossom (21.6%), leaves (15.7%), roots (14.6%) and seeds (10.7%). Priority was given to herb, blossom and leaves because they are soft raw material and thus the therapeutic properties are easier to elicit. Hard parts of plants (seeds, roots, buds or bark) were used less frequently and at the time when they accumulated the necessary substances. Whole plants were used least frequently - it was probably because of the local traditions that the usage of specific parts rather than the whole plant predominated.

The most popular modes of preparation were tea (mentioned in 64% of cases) and ethanolic tinctures (14.9%). Ethanolic tinctures were mostly used for the preparation of the hard parts of plants (buds, roots or seeds). The preparation requires maintaining certain temperature conditions, which was thought affects the success of treatment. For instance, the blossom of horse chestnut (*Aesculus hippocastanum* L.) were infused with vodka and buried in the ground for 1 year (thus maintaining constant temperature). Some preparation techniques were mentioned by only a few respondents. The general spectrum of the techniques was yet sufficiently wide. The following dosage forms were prepared in home conditions: ointments, decoctions, powder (ash), juice, compresses, baths and oil extracts.

The most common diseases and the most popular medicinal plants

There were the medicinal plants most frequently used for the treatment of alimentary tract disorders (22%), disorders of the respiratory tract (20%), wounds, other

traumas and bites (10%), renal and urinary tract disorders (10%), nervous and emotional disorders (9%) in the studied region. The data of the study showed that medicinal plants were used only for the treatment of minor traumas (wounds and bites), in primary stages of the disease, for prevention or for chronic diseases together with conventional treatment. In rare cases (1%), herbal remedies were used for oncologic diseases, but - as the majority of the respondents stated - only as complementary treatment.

The study showed that the spectrum of the usage of some plants was very wide. Such plants included *Calendula officinalis* L., *Vaccinium vitis-idaea* L., *Valeriana officinalis* L., *Hypericum perforatum* L., *Artemisia absinthium* L., *Symphytum officinale* L., *Quercus robur* L., *Populus x canescens* Aiton, *Anthemis tinctoria* E.C. Buxton, *Achillea millefolium* L., *Acorus calamus* L. and *A. hippocastanum* L. These plants were most frequently mentioned by respondents and the indications for their use coincided between different respondents. This shows that these plants were most easily recognizable, were prevalent in the studied region and were characterized by long traditions of usage.

Mixtures of medicinal plants were not predominant. However, the respondents mentioned the compositions of several mixtures. The mixtures included plants that were separately used for the treatment of the target disease and had a synergistic effect when used together. These interactions could involve the potentiation of therapeutic effects or attenuation of toxicity or adverse effects within the preparation. Medical herbalists have often insisted that better results are obtained with whole plant extracts rather than with isolated compounds (Evans, 2002).

Treatment of psychosomatic disorders

The respondents also mentioned other methods of treatment they used in addition to medicinal plants. They usually presented these methods as ancient and virtually obsolete nowadays, although indicated that they were still used in isolated cases. "Magic techniques" were used for the protection from the "evil eye" believed to inflict the various disorders. Fumigation was mentioned as one of such techniques.

Fumigation is used rarely - only a few respondents mentioned fumigation with *Juniperus communis* L. which was mostly used for air disinfection. One of the "magic" uses of medicinal plants was protection from the "evil eye" and therefore the plant used for this purpose - *Ferula asafoetida* L. (local name - "devyndrekis") - was not attributed to the group of plants used for therapeutic purposes.

As the respondents indicated, "love potions" were used rarely - mostly as the last resort. Such remedies include *Orchis mascula* L. This plant was used to prepare a decoction and apply as male "love potion". This plant is rare because it requires specific conditions. It grows in the local telmological (swamp) reserve and is a protected species. Thus, it can be stated that this plant is specific to this region concerning its use because the majority of the local population knew the indications for its use.

Conclusion

Old treatment techniques in Lithuanian folk medicine have survived since the times when qualified medical assistance was hardly accessible. It is a unique fact that in times of developed modern medical assistance the locals of the studied region of Samogitia actively use traditional medicine or, more specifically, traditional herbal medicine and combine it with modern medicine.

In Lithuania the traditional medicine has its own traditions - knowledge was passed only to family members and thus some information was considered confidential and could not be disclosed to the outsiders. At present the habit of keeping the knowledge secret is gone and therefore the current period is favorable for the collection of information, although the issue of a closed community still exists. However, this study has shown that the knowledge about the traditional medicine among the local population and local healers is dwindling, which indicates an immediate need for further studies aimed at the preservation of the knowledge about the traditional medicine in a unique region and at the integration of this knowledge into today's healthcare.

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