SHORT COMMUNICATION

Ethnobotanical records of not yet documented therapeutic effects of some popular Bulgarian medicinal plants

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Abstract

Despite the existence of many relevant publications, and of reliable records of the traditional empiric data about medicinal plants in Bulgaria, over the last few years we found quite a lot of hitherto undocumented data about the healing properties of plants. In order to test the contemporary status of the traditional knowledge about medicinal plants, we performed the study as a Rapid Ethnobotanical Appraisal in the way of structured interview based on fixed questions namely what plants are used against certain health disorders. We therefore interviewed 183 people during the summer of 2011: some whom we knew to be particularly interested in medicinal plants and traditional ways of healing, and also a random sample of people of different ages. These subjects were all over l8. The survey was called "Granny had a cure for this." (or "Granny knew how to cure this.") In this paper we present data for remedial properties of popular medicinal plants which have not been documented in the literature yet - *Pulsatilla pratensis* - fresh leaves used as compress against exostoses, *Sambucus ebulus* - immature fresh leaves used for compress in case of exostoses, *Primula veris* - leaves infusion used against vertigo and *Nepeta nuda* - application of decoction internally against cystitis and prostate gland inflammation as well as externally against wounds and on the stock udder against mastitis. Comparative analysis of relevant studies was also done.

Key words: Medicinal plants, *Pulsatilla pratensis, Sambucus ebulus, Primula veris, Nepeta nuda,* Remedial properties, Bulgaria

Introduction

Etnobotanical data are very important base for further pharmacological tests. For example the results of pharmacological tests are leading to the hypothesis that *Lonicera tatarica* and *Viburnum opulus* species could be used for the development of novel antimicrobial products or strategies for fighting medical biofilms (Bubulica et al., 2012). The background for these tests is again some data about traditional use of the plants. In the huge pool of traditional data sometimes appears information about therapeutic effect that is not quite popular. For instance pharmacological tests inspired by ethno botanical knowledge revealed that leaf extracts of *Melissa officinalis* can improve cognitive performance and mood and may therefore be a valuable adjunct in the treatment of Alzheimer's disease. This plant species that is widely used as a mild sedative and sleep aid has been traditionally attributed with memory-enhancing properties (Kennedy et al., 2003).

In the contemporary reality of globalization and urbanization in Bulgaria, traditional empiric ethnobotanical knowledge is disappearing. Despite that discouraging tendency, we have found several examples of traditional empiric data which had not been documented and so we were inspired to see what more had been overlooked.

As a whole, the traditional knowledge of medicinal plants and their uses, preserved and transmitted from generation to generation, is quite well documented in Bulgaria. The collecting of common names was pioneered by teachers, university professors, naturalists, folklorists and physicians during 19th and 20th century. These pioneers recorded their use for conventional remedial purposes and also their use in traditional spells and magical rituals (Stanev, 2010). This collection of ethnobotanical data led to the

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publication of valuable scientific works (Petkov, 1982; Pamukov, 1992; Nikolov, 2006) etc. The traditional knowledge documentation bases the list of 741 taxa recognized in Bulgaria by the law as medicinal plants, although the therapeutic effect and application is not specified (Medicinal plant act, 2000). The formulas of the famous Bulgarian healer, Peter Dimkov, are well known for their efficacy, as is accepted by the vast majority of Bulgarians. His books have gone into numerous editions, the last one after his death (Dimkov, 2001). The last decades ethno botanical research was performed both by national and foreign scientists (Ivancheva and Stantcheva, 2000; Leporatti and Ivancheva, 2003; Nedelcheva, 2009; Nedelcheva and Dogan, 2009).

The development of new drugs has often taken place as the result of clues provided by local and traditional knowledge of the medicinal or toxic effects of vascular plants, algae, fungi etc. This traditional expertise is not always acknowledged, but many scientists have seen this to be one of the driving forces of ethnobotanical research (Giovannini and Heinrich, 2009; Heinrich, 2010).

In this paper we focus on the data for remedial properties which we found apparently new or as yet not documented in the literature for generally acknowledged medicinal plants. We aimed to document this empiric information on the traditional use of plants 1) and thus to preserve the knowledge that has still not been recorded in the literature and 2) also to provide opportunities for further study of chemical constituents and/or biological activities. Comparative analysis of relevant studies dealing with same health disorders or same plants is done.

Material and Methods

In order to test the contemporary status of the traditional knowledge about medicinal plants we performed the study as a Rapid Ethnobotanical Appraisal in the way of structured interview based on fixed questions namely what plants are used against certain health disorders (Gerique, 2006).

During the summer of 2011, 183 interviews were carried out. The interviews were performed in towns and villages from several districts of Bulgaria (Sofia, Ichtiman, Vidin, Plovdiv, Dobrinishte, Pleven, Kavarna, Tzarevo). As a result of urbanization strict topographic localization of the knowledge is impossible. Even the data obtained from town inhabitants originate from different villages localized nearby or rather distant ones. Target groups were both few people whom we knew to be particularly interested in medicinal

plants and traditional ways of healing and also the majority was a random sample of people – male and female of different social status and different ages, above 18 and the oldest informant was at the age of 92. Basically we aimed to test the attitude of a random sample of people to the herbs and the traditional way of healing: 1) to find out what herbs were most popular among the population of Bulgaria; 2) what was most popular application; 3) to test how negative or positive attitude to the traditional use of medicinal plants was related to age and gender of people.

Data analysis

Ethnobotanical data were analyzed and summarized by using Microsoft excel and statistics to determine relative frequencies of citations so as to identify the most common and popularly used plants in the study area. The detailed results of the analysis are published elsewhere (Kozuharova et al, 2013). Here we summarize and emphasize some of our new findings concerning the therapeutic effect that are not documented yet in the scientific literature dealing with Bulgarian official or folk medicine application of plants. In this paper we focus on data that are preserved by transmitting verbally from generation to generation and we did not find records for this in the scientific publications.

Our research team consisted of lecturers in pharmaceutical botany and pharmacognosy and undergraduate students. We devised a questionnaire listing the main groups of medicinal problems: problems with vision, inflammation of the eyes, inflammation of the ears, skin inflammations, rashes, warts, joint pains, rheumatism, sciatica, exostoses, failures of the immune system, colds, bronchitis or other problems of the, respiratory tract, contraception, miscarriage, breast feeding, mastitis, colic, bedwetting, blood disease, hypertonia, heart disease, gastrointestinal tractdiarrhea, constipation, kidneys, problems of the urinary tract, cystitis, menstrual disorders, prostatitis, treatment of trauma/wounds, memory loss and insomnia. In order to trigger the informants and obtain as much as possible information without boring and repelling them, we tried to balance between not enough detailed and too heavy list. The key point concerned the origins of the information – the source of knowledge had to be that it had been transferred from generation to generation in the traditional way, not learned from books. In other words, our motto was "Granny's cure for this was ….".

Ideally, we to obtained a sample of the plant in question, or 'voucher material', but most often we were given a description which would go with the common name. From all listed in this paper plant species we obtained voucher materials of only *Pulsatilla vulgaris* and *Nepeta nuda* (blend). They are deposited in the Herbarium of the Faculty of Pharmacy. The voucher materials were identified after Jordanov (Jordanov, 1963-1995) (namely *Pulsatilla vulgaris*) or by comparison to reference material in the herbarium (registered herbaria of University of Sofia and Institute of Botany, SO, SOM namely *Nepeta nuda*). Data are grouped according to the therapeutic effect in the Results and Discussion part of this paper. We include a comparative analysis of the published literature concerning data for the content of secondary compounds and also an analysis of the popular use of these compounds as well as a summary of other plants recommended for such disorders in folk medicine.

Results and Discussion

Totally 77 plant species (including the ones in the formula combinations) were mentioned during the investigation. They belong to 38 families. The most important families are Lamiaceae, Rosaceae, Asteraceae and most popular plants as "Granny's cure" were *Hypericum perforatum*, *Cotinus coggigria, Plantago major, Sempervivum* sp. div., *Calendula officinalis, Melissa officinalis, Allium sativum, Aesculus hippocastanum*, *Matricaria chamomilla* and *Cornus mass.* The great number of herbs is used to treat disorders of CNS (Central Nervous System), bones, skin, gastro-intestinal and respiratory system – details are provided in other paper of ours (Kozuharova et al., 2013). In this paper we emphasize on data for remedial properties which we found apparently new or as yet not documented in the literature for generally acknowledged medicinal plants.

Most of the new data that we found were connected to healing of exostoses and problems related to Central Nerve System (CNS) in one or another form. Each new fact presented in this paper was reported once (0.6% of all reports). In other words these are not very popular folk medicine applications.

Exostoses healing

Pulsatilla vulgaris Mill. Ranunculaceae (Figure 1). Voucher material was provided and reported that fresh leaves are used as compress against exostoses. Warning was that in case of prolonged application "muscles could be melted" was given

too. This is quite unusual use which we found to be new. The plant is known as sedative and anaphrodisiac (Petkov, 1982). It is prescribed as central-acting analgesic (Yarnell, 2002). In homeopathy Pulsatilla 6X is used against migraine disorders, vertigo, neuralgic pain, venous stasis (Gottwald and Weiser, 2000).

Figure 1. Voucher material of *Pulsatilla vulgaris* Mill. presented by the informant.

Sambucus ebulus L. Adoxaceae (Caprifoliaceae). Immature fresh leaves are used for compress in case of exostoses. It is popular herb recognized by Medicinal plant act (Medicinal plant act, 2000). It is known mainly for diuretic, antiseptic and expectorant therapeutic effects and additionally it is used as laxative, anti-hemorrhoidal, anti-tuberculosis, against neuralgia and rheumatism. Root flowers/inflorescences and fruits are mainly used. Additionally leaves in folk medicine are used as decoction against intestinal colic (Petkov, 1982).

Central nerve system healing

Primula veris L. (*P. officinalis* (L.) Hill.) Primulaceae. Folium infusion was found to be used against vertigo and this information we did not find documented in the literature. *P. veris* is rather popular herb recognized by Medicinal plant act (Medicinal plant act, 2000). It is known mainly as expectorant. Additionally empiric data are available

for neurosis and insomnia cure (Petkov, 1982; Nikolov, 2006). The only mentioning of this plant against vertigo is not related to herbal medicine but to homeopathy (Anonimous, 2011).

Other therapeutic effects

Nepeta nuda L. Lamiaceae – we were given aerial parts plant substance as a voucher material of this plant species (Figure 2). The informant reported application of decoction internally against cystitis prostate gland inflammation. Externally decoction was applied against wounds and on the stock udder against mastitis. So far in Bulgarian literature is listed *Nepeta cataria* L. It is recognized by Medicinal plant act (Medicinal plant act, 2000).This plant species is popular for its antimicrobial, spasmolytic and calming effect (Nikolov, 2006) and it is considered to be especially effective against sepsis (Petkov, 1982). Essential oil of *N. nuda* was found to show weak antioxidant activities and the results suggested that *N. nuda* essential oil could be a natural antibacterial agent (Alim et al., 2009). Another research revealed that Antioxidant activity of *Nepeta nuda* L. ssp. *nuda* is proven - the essential oil had significant effects on lipid peroxidation (Gkinis et al., 2010).

Figure 1. Voucher material of *Nepeta nuda* L. presented by the informant.

Conclusion

The ethnobotanical data should always be treated with caution when it concerns medicinal properties of plants and further pharmacological tests are required in order to accept officially the application. Sometimes plants used traditionally in folk medicine are officially rejected due to some toxicity or negative side effects. At the same time ethnobotanical data are valuable source of basic information. We consider that some of the unrecorded knowledge that we found as a result of our study deserves further research, especially the therapeutic effects of *Pulsatilla vulgaris* and *Primula veris*. Such effect on CNS reported for *Primula veris* is quite unusual for this plant well known for its expectorant properties.

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