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Survey of traditional beliefs in the Hungarian Csángó and Székely ethnomedicine in Transylvania, Romania

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ABSTRACT

Transylvania, part of Romania, has a long-standing culture of Hungarian ethnomedicinal practices. The aim of this study was to review the unexplored ethnopharmacological use of plants, animals and other materials, focusing mainly on the beliefs surrounding them; and compare them with traditional uses from other countries and with scientific literature. An ethnobotanical inventory was conducted among Csángó and Székely Hungarians in three areas of the country between 2007 and 2012. Questionnaires included medical and non-medical uses of plants, animals, and other substances with rational and irrational elements. Altogether 22 plants, twelve animals, and ten other substances had documented uses for various beliefs. The treatments utilize magical numbers, like 3 and 9, to define peculiar order, tools, and like-minded aspects. Plants were used for prediction (*e.g. Phaseolus vulgaris* L.), protection (*e.g. Corylus avellana* L.), and as symbols (*e.g. Arctium lappa* L.). In addition to the use of animals (*e.g. Salamandra salamandra* L.) or no longer used elements (use of *Lytta vesicatoria* L.), the employment of other substances (*e.g.* ash, milk) was also documented. The frequency of the documented uses is in continuous decline due to environmental and social changes, and the increased prevalence of conventional healthcare. Hence, the priority of their conservation is of pivotal importance nowadays.

Introduction

The traditional elements of the folk medical systems include materials from various origins such as plants, animals, minerals, human and other substances (Hoppál and Törö, 1975) that refer to rational and magical properties in the healing practices all over the world. Plants have been associated to unique beliefs and local ceremonial customs for human and veterinary medicine; as well as having religious and faith healing qualities in several regions of the world (Hoppál, 1992; Green, 1998; Cavender and Albán, 2009; Muleady-Mecham and Schley, 2009; Sharma and Pegu, 2011; Campos-Navarro and Scarpa, 2013; Juárez-Vázquez et al., 2013)

Transylvania, a former part of Hungary, currently belongs to Romania. Hungarian-speaking natives using various dialects are the main inhabitants of this region. They abide in poor living conditions preserving the roots of the traditional ethnomedicinal knowledge more efficiently than

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the Hungarian inhabitants. Several regions of Transylvania began to be ethnobotanically and ethnopharmacologically explored at the start of the 20th century, and the first field study was conducted at the Ghimes mountains (Rácz and Holló, 1968), with the summary work from several other areas by Borza (1968) and Butura (1979). However, several earlier folk medicinal investigations reported both rational and magical elements (Kóczián et al., 1976; Antalné, 2003); most beliefs and rituals preferred by Csángó people. In contrast, the Székelys provide most rational and less magical healing practices, in Zona Călata (Kóczián et al., 1977; Péntek and Szabó, 1985; Vasas, 1985), Trei Scaune (Péntek and Szabó, 1976), the old Bucovina (Grynaeus and Szabó, 2002), Moldova (Halászné, 1981; Halász, 2010), Ciuc (Miklóssy, 1980), Gheorgheni (Rab, 2000), Homorod (Gub, 1993; 1994), and Covasna (Rácz and Füzi, 1973; Papp et al., 2011a).

The discerned magical data are commonly based on longstanding experiences of the people and the insufficiency of rational medical methods. These magic and mythological rituals, spiritual beliefs, symbols, prayers, magical phrases, and incantations carry emotional and subjective aspects in the Transylvanian ethnomedicine. They have psychosomatic and healing effects (Gub, 1994), as well as preventive and protective roles. They are used not only to alleviate various ailments, but are protective against bad spirits, demons, ghosts, witchcraft, sorcery, and against local supernatural entities such as "*lüdérc*" or "*lidérc*", a supernatural being of Hungarian folklore (like genie), or "*szépasszony*", the Fair Lady (a female demon who seduces young men and comes out to dance in storms and hail-showers) (Diószegi, 1982).

Historical and magical roles of plants, animals and other materials (in this work: substances of neither animal nor plant origin) have been described as earlier sacramental objects for the local healing practices. Sacramental objects include blessed or sacred objects used in ceremonies and rituals for protection and to deter supernatural entities, it is the case of the plants: *Helleborus purpurascens* Waldst. and Kit. (Gub, 1994; Halászné, 1981; Kóczián et al., 1976; Péntek and Szabó, 1976), *Atropa belladonna* L. (Kóczián, 1990), *Phaseolus vulgaris* L., *Hordeum vulgare* L. (Grynaeus and Szabó, 2002), *Triticum aestivum* L. (Hoppál and Törő, 1975), *Betula pendula* Roth. and *Salix* sp. (Grynaeus and Szabó, 2002; Gub, 1994), and the toad *Bombina variegata* L.

Based on earlier and recent data, Transylvania is considered as an important area in Europe encompassing ancient ethnomedicinal treatments used in the everyday life of the rural people. The aim of this study was to review the richness of beliefs and sacramental elements in three Transylvanian regions inhabited by Csángó and Székely people, focusing on plants, animals, and other materials used for medicinal and non-medicinal purposes.

Materials and methods

Study area

The Csángó and Székely districts, located within the Carpathian, are covered mostly by pine forests, pastures and hayfields. This work was conducted in three regions of the Harghita County in Transylvania (Fig. 1), sparsely populated by Hungarian-speaking residents. These areas were selected according to their isolation, the large distance from major cities and the lack of infrastructure and communications. Most people work in agriculture (Table 1), cultivating *Allium cepa* L., and varieties of *Solanum tuberosum* L., and *Phaseolus vulgaris* as primary edible vegetables. Livestock production of cows, pigs, sheep and poultry, is of vital importance for their livelihood.

At the Uz-valley in East-Romania, Csinód (in Romanian: Cinod) and Egerszék (Egershec) villages, which are inhabited by Csángó people, were selected. In the Csángós' regions, the villages are divided into streets and named after the local name of the streams completed with the term "*pataka*". In accordance, Csinód is divided into Katirésze-pataka, Őrház-pataka, Aklosbérce-pataka and Nagylenes-pataka. In these settlements, electric installations were introduced until 2000, and most households have no plumbing. There is no mobile phone coverage either. The nearest settlements with a permanent medical service and a hospital are 13 and 26 km away, respectively, that can be reached after travelling on roads in bad conditions (Bárth, 2004). According to the lack of the medical attendance, there are healers specialized in different areas such as administration of injections, ethnoveterinary or dental medicine. Their work is accompanied by unique magic and mythological elements, incantations, and beliefs. Previously, midwifery had been a concern in the region, but this tradition has been finished for a long time.

Gyimesfelsőlok (also known as Lunca de Sus) by the Tatros river was the second Csángó area studied, in the Ghimes-valley. Although this settlement has its own pharmacy and an official medical service, the ancestral Csángó ethnomedicinal methods include magical elements still.

In the Homorod-valley, Lövéte (Lueta) is inhabited exclusively by Székelys. It holds an official veterinary service, its own pharmacy since 2008 and receives occasional medical and dental services from nearby settlements. In addition to official treatments, traditional treatments relating irrational and magical components were also ethnobotanically assessed.

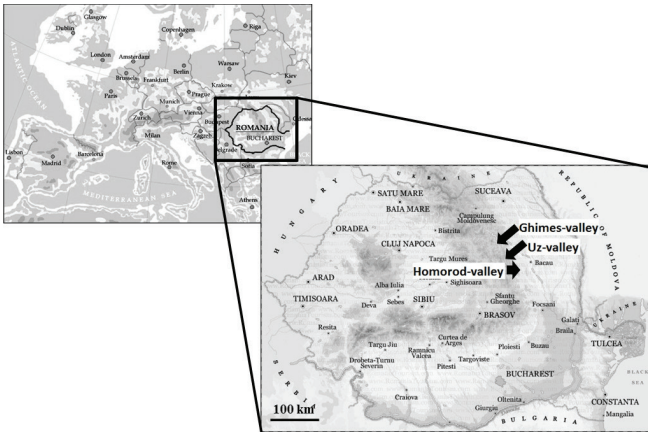

Figure 1 - Map of studied areas in Transylvania, Romania (http://www.romaniatourism.com/maps.html).

Table 1
Study areas in Transylvania.

Region	Village	Geographical latitude	Geographical longitude	Altitude (m)	Number of respondents/ dwellers	Ethnic group	Occupations
Uz-valley	Cinod	46° 18' 0"	25° 56' 0"	1100-1200	45/200	Csángós	Agriculture Preparation of dairy products
	Egershec	46° 18' 13"	26° 3' 55"	1100-1200	25/100	Csángós	Agriculture Preparation of dairy products
Ghimes-valley	Lunca de Sus	46° 31' 44"	25° 57' 33"	900	25/650	Csángós	Agriculture Preparation of dairy products
Homorod-valley	Lueta	46° 16' 27"	25° 29' 15"	610	112/2900	Székelys	Agriculture Labour work in neighbouring settlements

Ethnobotanical inventory

Fieldwork was carried out by the first and second authors through casual conversations and semi-structured interviews lasting 90-120 min (altogether 75 h), notes, and about 1200 photos of living and dried plants, animals, preparations, habitats, and respondents from 2007 to 2012 (92 days total). Randomly selected data were collected from 75 Csángó and 112 Székely respondents aged between 58 and 99 (the median is 78.5) by "snowball sampling" (Table 1). Several plant species are available in the forests and meadows, others are harvested from the gardens. Local plant names, their medicinal and non-medicinal purposes, the preparation techniques of commonly used plants, animal, and other materials, as well as the efficacy of these treatments were documented during the personal meetings. We collected data related to the beliefs about the route of administration, the used numbers, order, devices, materials, time of treatment, and related aspects. The most frequently mentioned references, which have a local cultural meaning in these areas, were tabulated in the results (Heinrich et al., 2009).

Local terminology of Csángós and Székelys, original plant names and prescriptions (translated into English) are written in *italics* between inverted commas, but the plant names corresponding with the official Hungarian terminology are listed without *italics* in our summary. In addition to the descriptions from the local healers, several personal observations were conducted in the field, complemented with inclusion at the herbarium of samples collected onsite, which was carried out under the guidance of locals. The following lists were used to evaluate the conservation status of plants and animals: the Romanian Government Decree (OUG 57/2007) and the Hungarian Ministry of Environment Decree (KÖM 13/2001) valid at the European Union referring to the protection of plant and animal species. Voucher plant specimens were identified (Tutin et al., 2010) using only whole plants, labelled (acronyms) and deposited at the Department of Pharmacognosy of the University of Pécs. The acronyms (Table 2) were constructed using the first letter of the genus' and species' name of the plants followed by the numbers of the collected specimens.

Analysis of ethnomedicinal records and scientific data

The assessment of the records was carried out by comparison with earlier historical data in Transylvania and other countries. However, only very little data had already been published and integrated in databases until the beginning of the last century.

Ethnobotanical and pharmacological data were collected from various databases (PubMed, Science Direct, and Scopus) and compared with rational ethnomedicinal data of the selected Transylvanian regions. During the comparison the following viewpoints were taken into consideration: the similarity of local data to those from other countries, the identified chemical compounds, and the pharmacological studies confirming or adding the ethnomedicinal uses in the studied areas.

Results and discussion

The considered uses, along with their frequency of use, represent the present-day ethnomedicinal knowledge of the rural people in Homorod, Gyimes and Uz. Among the types of knowledge transfer mainly in vertical manner (Johns, 2000) was demonstrated, which means the inheritance of ancient knowledge from generation to generation (Halászné, 1981).

Beliefs and rituals were interpreted both by men and by women in each village. The interviewed farmers working in the fields usually know the distribution and habitats of the plants, as well as their use for human and ethnoveterinary treatments, for construction, and for handicrafts. Women work mostly around the house, and they hold knowledge about medicinal and edible uses of plants, and horticultural practices.

According to the route of administration and dosage, magical numbers like 3 and 9 are of primary importance in connection to the mentioned plants, animals, and materials, mostly in the Csángós' regions. Among the sacramental

elements, people attribute magical activities to blessed objects usually to bring peace and avoid deterioration, confusion, and danger caused by particular bad spirits.

The older Csángó generation strongly believes that if they transmit their incantations to a younger person, the efficiency will be lost during the actual treatment or even perpetually (Papp et al., 2013). The majority of the Székelys in Homorod consider the beliefs as only fictions without any healing value; hence they rely mostly on their own experiences and the medical resources available locally (*e.g.* the popular books of Maria Treben). Nevertheless, a few superstitions were mentioned by the elders as local practices used in the Homorod-valley.

Beliefs in connection with plants

In our study, a total of 22 plant species, including one protected species (*Helleborus purpurascens*) (OUG 57/2007; KÖM 13/2001), were documented to have unique peculiarities (Table 2). Among these species, five plants were mentioned as ornamental without healing effects, and seventeen species were used for medicinal purposes. Leaves were the most frequently used parts of the plant (41%), followed by aerial parts (17.7%), bulbs, flowers and resin (11.8% each), and roots (5.9%). The most commonly cited preparations were baths, decoctions, fomentations and tea, while the most frequent indications were to treat skin and digestive problems, hypertension, rheumatic and respiratory diseases, and pain. Although data from about 220 plants with medicinal use but without magical properties were collected simultaneously in this study, these data are not presented in this paper.

Among the magical numbers, the number 3 was applied in the triplicate prayer associated with *Betula pendula* used in case of storm. The number 9 was used for prediction using 41 seeds of *Phaseolus vulgaris*: after their random dispersion and classification into nine groups accompanied by prayer people can make predictions according to the position of the seeds (Diószegi, 1977); this practices were encountered earlier in the old Bucovina, too (Grynaeus and Szabó, 2002). The scale leaves of *Allium cepa* were also used for prediction (Hoppál, 1979): altogether 12 scales, the symbols for next year's months are salted in the new year's eve, and the next day people study their condition: scales with melt salt forecast rainy months, whereas the others refer to dry periods. *Hedera helix* L. predicts fatality in the short term if its stem grows around the room; therefore it is continuously checked and cut to avoid death in the family (Table 2). The branches of *Picea abies* (L.) Karst. in a bunch, decorated with bands are given to women and men to predict death: whose needles (known as "*csereklye*") begin to shed, she or he will die earlier (Table 2). In addition to the collected data about the syrup made from the fresh cone or leafy branches, the antibacterial effect of the resin has been proven earlier (Rautio et al., 2007).

Among the plant symbols, colour change of the endemic *Anemone narcissiflora* L. was mentioned in the Csángós' regions: if the pink flower turn white, a shame will disappear. While in Homorod, it is thought to mean the end of shame if the dark point in the middle of the inflorescence of *Daucus carota* L. disappears, in accordance to earlier written records about this region (Gub, 1994). During database survey, we found that antibacterial activity of the flower of a subspecies of *D. carota* has been previously scientifically proven and documented (Jabrane et al., 2009). In *A. narcissiflora*, triterpene saponins have been detected (Masood et al., 1981), but its biological activity has not been investigated yet. This fact suggests that this plant is available for further scientific investigation.

In Ghimes, the root of *Armoracia lapathifolia* Usteri with vinegar "*can draw out the strength*" causing weakness and fatigue, therefore people consume it only in itself. Leaf of *Arctium lappa* L. is put under home-baked breads as a replacement of the commonly used leaves of *Brassica oleracea* L. in Homorod (Table 2). Scientific data about documented external use of the leaf of *A. lappa* for abscesses in the ethnoveterinary of Canadian farmers was found (Lans et al., 2007).

In the ethnoveterinary, the healing effect of the root of *Helleborus purpurascens* was described in our work, in accordance to earlier studies in both Csángós' (Halászné, 1981; Kóczián et al., 1976; Papp et al., 2011b) and Székelys' regions (Papp et al., 2013; Péntek and Szabó, 1976): the ears of young pigs are punctured with a needle and a piece of the root is inserted into the hole against headache in pneumonia to last several days. In Uz, numerous pigs have hollowed ears nowadays (Fig. 2). The analgesic effect of this species has been studied *in vitro* over its effect on capsaicin receptors (Neacsu et al., 2010).

At Uz, the decoction of *Hypericum perforatum* L. is poured only into the left nostril of horses to treat diarrhoea because the administration into the right nostril or the mouth would lead to death of the animals ("*it goes to the lung*"). The antidiarrhoeal effect has been recently demonstrated by several studies (Brenner and Chey, 2010; Saito et al., 2010). In Homorod, this plant is regarded as a blessed plant since "*the blood of Jesus has been dropped on its leaf under the cross-tree*" (Table 2).

Among the main sacramental objects in Ghimes, blessed cloves of *Allium sativum* L. are placed in flour or in blessed water, and rubbed on the back and mane of horses accompanying it with Lord's prayer against bad spirits. The cloves residues are given to poultry on St. George's day

Figure 2 - Hollowed ears of pigs after treatment with *Helleborus purpurascens* root (Uz-valley, 2007).

Table 2
Ethnobotanical data and beliefs in the studied Transylvanian regions.

Scientific name, family, voucher code	Local name	Study area	Bulb for digestive problems and earaches	Local peculiarity and customs	Frequency of mention	Some previous records on medicinal or peculiar uses
Allium cepa L., Liliaceae AC_05	*Piroshagyma, vereshagyma*	G	Bulb as vermifuge, for cough and hypertension	Bulb used as a predicting calendar	9	Bulb: with honey for treating colds (Kékesi, 1980), for prediction (Hoppál, 1979), cytotoxic (Al et al., 2013), antioxidant (Hur et al., 2013)
Allium sativum L., Liliaceae AS_07	Fokhagyma	U	No ethnomedicinal data Ornamental plant	Blessed bulb rubbed in horses as a symbol of protection	22	Bulb: rubbed in horses against bugs (Kékesi, 1980); antioxidant, for vasodilatation (Ahmad et al., 2013)
Anemone narcissiflora L., Ranunculaceae AN_15	*Szégyenvirág, szélrózsa*	U	Leaf for kidney as foment Leaf for wounds and sunstroke, root for diabetes, heartburn, and hair loss as decoction	Colour change of the flowers refers to the disappearance of a shame	7	No ethnomedicinal report was found
Arctium lappa L., *Asteraceae*	*Burusztuj, këptelán*	G	Leaf for headache, root for sore throat	Inflorescence as a child's toy	6	Leaf: in ethnoveterinary medicine
AL_03	*Jézus párnája, ragodály, keserűlapi*	H		Leaves as a pillow for Jesus	12	for abscess (Lans et al., 2007), diabetic nephropathy (Ma et al., 2013)
AL_10				Leaf during bread baking		
Armoracia rusticana P. Gaertn., B. Mey. and Scherb., Brassicaceae AL_02	Torma	G	Leaf for headache, root for sore throat	Consumption of the root with vinegar leads to fatigue	21	Root: antibacterial, antioxidant (Itzincab-Mejía et al., 2013)
Betula pendula Roth, Betulaceae BP_01	Nyír	G	Leaf for colds as foment, for rheumatism as bath and foment, for hair loss and dying as decoction	Blessed branches in the storm and at weddings Branches for broom	18	Leaf: in folk cosmetics (Pieroni et al., 2004), for broom (Nedelcheva et al., 2007)
Boswellia serrata Roxb., Burseraceae BS_03	*Timén, timen, timény*	G	Resin inserted into the decayed teeth	Use besides the light of a blessed candle On Groundhog Day	12	Resin: in ethnoveterinary medicine (Upadhyay et al., 2011), diarrhoea (Gutiérrez et al., 2007)
Chrysanthemum leucanthemum L., Asteraceae CHL_02	*Papvirág, margaréta*	G	No ethnomedicinal data Ornamental plant	For girls as a bunch at First Sacrifice	8	No ethnomedicinal report has been found; aerial parts: antibacterial (Kováts et al., 2010)
Corylus avellana L., *Corylaceae* CA_04	Mogyoró	U	Leaf for piles as bath	Branches for tapping cows with prayer against charm	13	Young shoot: for basket (Kültür, 2008)
Daucus carota L., Apiaceae DC_08	*Szégyönvirág, murokvirág*	H	Flower for indigestion and stomachache as tea	Colour change of the inflorescence refers to the disappearance of a shame	5	Root: diabetes (Gunjan et al., 2011), seed: for male sterility, menstrual control (Jain et al., 2004)
Geranium pratense L., Geraniaceae GP_01	*Szent János virág, Szent János fű*	G	Aerial parts as an analgesic as bath and tea	Collection only before St. John's day	8	Aerial parts: anti-inflammatory (Küpeli et al. (2007)
Hedera helix L., Araliaceae HH_07	Borostyán	G	No ethnomedicinal data was found	Stem for prediction of death	4	No ethnomedicinal report was found
Helleborus purpurascens Waldst. and Kit., Ranunculaceae HEP_12	*Eszpenz*	U	Root as an analgesic and immunostimulant	Root inserted into the ears of pigs can "pull out" the pain	18	Root: immunostimulant (Kóczián et al., 1976; Péntek and Szabó, 1976; Halászné, 1981), as an analgesic (Neacsu et al., 2010)
Hypericum perforatum L., Guttiferae HYP_06	*Vérburján, ábelvére, ótvarburján, jódombfű, pozsárnyica*	U H	Aerial parts for wound, bleeding, diarrhoea, gastric ulcer, kidney and heart diseases as tea	Its tea poured into the nostril of horses against diarrhoea Blessed plant	5	Blood of Jesus dropped on the leaf causing spots (Grynaeus and Szabó, 2002); aerial parts for diarrhoea (Brenner and Chey, 2010; Saito et al., 2010)

(Cont.)

Table 2 *cont.*

Scientific name, family, voucher code	Local name	Study area	Bulb for digestive problems and earaches	Local peculiarity and customs	Frequency of mention	Some previous records on medicinal or peculiar uses
Nicotiana tabacum L., Solanaceae NT_04	*Dohány*	H	Fresh or dried leaf	Powdered leaf into the teeth and ears as an analgesic; chewed leaf spat into the eyes for cataract of cows; against snakes as protection put beside children and fence	11	Powdered leaf blown into the eyes of horses for blindness (Grynaeus and Szabó, 2002); chewed leaf in traditional and clinical aspects (Ratsch et al., 2010)
Phaseolus vulgaris L., Fabaceae PHV_06	*Faszulyka, fuszulyka, zódpuszuly*	U	No ethnomedicinal data Food plant	Seeds for prediction with prayer	6	Seed: prediction (Diószegi, 1977; Grynaeus and Szabó, 2002), rheuma (Marc et al., 2008)
Picea abies (L.) H.Karst., Pinaceae PA_09	*Lucsika, vörösfenyő*	U	Cone for cough, pneumonia, kidney diseases and burnt wound as syrup	Branch for prediction of death; as a gift on the second day of the new year	25	Resin: in balm (Šari-Kundali, et al., 2010); antibacterial (Rautio et al., 2007)
Salix caprea L., Salicaceae SC_04 SC_06	*Pimpó, pimpófa* *Rakottya*	G, H, U H	No ethnomedicinal data Leaf as an analgesic	Blessed branches in the case of a storm and on Palm Sunday In household tools and baskets	36 10	Branch: in religious rituals (Gub, 1994; Péntek and Szabó, 1985), anti-inflammatory (Tunón et al., 1995)
Salix purpurea L., Salicaceae SP_08	*Fűzfa*	U	No ethnomedicinal data	Branches for "suprika" on Holy Innocents' Day	9	Branches for "suprika" on Holy Innocents' Day, against lightning (Grynaeus and Szabó, 2002)
Syringa vulgaris L., Oleaceae SV_05	*Fehér-burusnyán, fehér orgona, burusnyánlapi*	H	Leaf for bleeding wounds, joint and muscle aches	Leaf for "burnt wound of Judgment Day"	6	Leaf: antiradical (Fedoseeva et al., 2011), antiproliferative (Talib and Mahasneh, 2010)
Urtica dioica L., Urticaceae UD_08	*Csihán*	U	Aerial parts for hypertension, rheuma, and vasoconstriction as bath and tea	Aerial parts against snake bite with magic ceremonies	17	Aerial parts: rheuma, diabetes (Cakilcioglua et al., 2011), analgesic, antimicrobial, antihyperglycemic (Bnouham et al., 2003; Gülçin et al., 2004)
Zea mays L., Poaceae ZM_06	*Terebúza* *Tërëbúza*	U G	Stigma as diuretics as tea Stigma for urinary sand as tea	Blessed flour with water and garlic in fodder against bad spirits Flour for burnt wound as foment	12 7	Leaf and/or cornsilk: in ethnoveterinary medicine for udder edema (Lans et al., 2007)

Study area: *G,* Ghimes-valley; *H,* Homorod-valley; *U,* Uz-valley.

(24th April) or St. John's day (24th June) to maintain their health. Against bewitchment and "*szépasszony*", who have been defined as a peculiar supernatural entity of cyclones causing misfortune, dangerous charm, and illnesses both to people and animals (Diószegi, 1982), the bulb of garlic is nailed to the wall of the stable or braided to the mane of horses. Against curses, people cut long branches of *Corylus avellana* L. with their left hand and spat the cows with it while chanting the Lord's prayer backwards. They believe that after this practice the curse will be transferred to the person who caused it. The leaves of *C. avellana*, also used in the local ethnomedical practices (Table 2), have been documented to contain diarylheptanoid- and flavonoid-type phenolics (Riethmüller et al., 2013).

In Uz, *Urtica dioica* L. is used against the bite of *Vipera berus* L., which is widely distributed in the Transylvanian mountains. Similarly to other countries (Fita et al., 2010), several beliefs, myths and anecdotes are connected to the vipers in the region. In general, people have no interaction with the snakes, only during the treatment of the attack. In the case of bite, the herb *U. dioica* is dipped three times into a stream in the direction of the flow or into water in a dish, and then the bite wound is rubbed with it and treatment is accompanied by magical incantations (Papp et al., 2013). Another method involves the placing of the herb over the wound or mouth of the injured animals and then milk is poured over.

Focusing on the celebrated dates, the use of plants was mentioned in connection to the First Sacrifice, Judgement and Groundhog Day, St. John's day, Palm Sunday, and the Day of the Holy Innocents in the studied areas (Table 2). *Boswellia serrata* is known as frankincense and has been traditionally used for toothache treatment; recently Omura et al. (2009) have documented its anti-cancer effect on teeth. The herb, *Geranium pratense* L. collected before St. John's day has long-lasting

analgesic effects. Anti-inflammatory and antinociceptive effects of a subspecies of the plant has been proven by Küpeli et al. (2007) supporting its ethnomedicinal use in Turkey.

The popular role of *Salix caprea* L. in religious ceremonies was documented in each village (Table 2), similarly to previous surveys (Grynaeus and Szabó, 2002; Gub, 1994; Péntek and Szabó, 1985). Catholic people go on a pilgrimage to Csíksomlyó at Whitsun to ask for blessings of the leafy branches of *S. caprea* and *Betula pendula*. The blessed branches of *B. pendula* are thrown into the fire during storms accompanied by chanting of Lord's Prayer and Ave Maria depending on the branches' leaf number, whereas the branches of *S. caprea* are used as an ornament on Palm Sunday. Moreover, in Ghimes, brooms made of birch are used as protective tools against reptiles, passing round the house three times at the night of St. George's Day. A special tool, called "*suprika*", made from 6-8 branches of *Salix purpurea* L., is used during the Day of the Holy Innocents, when the boys visit and flap the girls saying poems, and they get coloured bands for this tool (Table 2).

Summarizing the documented beliefs in connection with plants, the most commonly known and used species in each area was *Salix caprea*. Local customs related to the use of *Arctium lappa*, *Hypericum perforatum* and *Urtica dioica* were documented in two villages only, while those of other species were observed as single data. As a novelty, special use of *Anemone narcissiflora* has not been documented previously in this region (Table 2).

Beliefs and local use of animals and other substances

We documented twelve animals used in the ethnomedicine involving five protected species (*Bombina variegata*, *Canis lupus* L., *Lacerta viridis* Laur., *Salamandra salamandra*, *Vipera berus*) according to the OUG 57/2007 and KÖM 13/2001. Among these, internal and external use of various animal parts (bones, eggs, hair, meat, milk, or skin) were mentioned (Table 3). For example; people believe that snakes can get inside children through their mouths, in this case they hang the children above milk to let the snake out. Against bites, the skin of *Vipera berus* and *Mustela nivalis* L., flayed before St. George's day, is pulled on a stick (Figs. 3-4) (Papp et al., 2013) and then is used for scrubbing injured body parts (Table 3) since people believe that harmful agents heal the injury. In the case of injury of people, both women and men may use ritualistic phrases three times a day, but animals can be treated only by one person at a time. Although this existing peculiarity has been described in earlier reports (Table 3), the transmission of these runes to younger persons has not been allowed recently; therefore they are not documented in our work.

The use of *Bombina variegata* for cataract treatment was reported recently in Homorod and Uz, and earlier in several Transylvanian regions (Table 3). The meat of *Canis lupus* was used for abscess treatment in Uz, in contrast to the earlier data in Ghimes where it is used against colic and angina (Antalné, 2003), and as an encouraging tool in Moldova (Table 3). The use of the hair of horses documented its use for warts, in accordance to previous reports (Halász, 2005). The eggs of *Lacerta viridis* collected before St. George's day and soaked in alcohol are used for diphtheria (Fig. 5). The use of *Lytta*

Figure 3 - Flayed skin of *Vipera berus* L. on stick (Uz-valley, 2009).

Figure 4 - Flayed skin of *Mustela nivalis* L. on stick (Uz-valley, 2007).

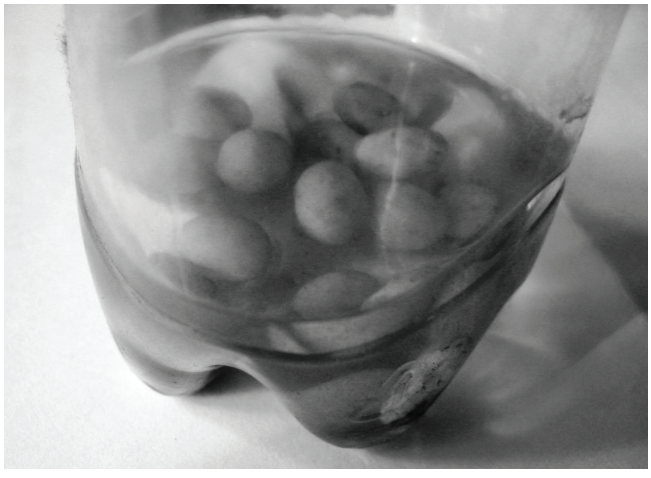

Figure 5 - Lizard eggs in alcohol, used for porcine diphtheria (Uz-valley, 2009).

Table 3
Local peculiarities and uses of animals in the studied Transylvanian regions.

Scientific name of animals	Local name	Study area	Route of treatment	Frequency of mention	Some previous records on peculiar and medicinal uses
Bombina variegata L.	*szentgyörgyi béka*	G, H, U	Placed in the eyes of cows for cataract For warts	21	Frog caught at the night of St. George's day and circled above tumours nine times (Hoppál, 1990); for cataract of horses (Vajkai, 1943; Kóczián et al., 1975; Halász, 2005); antihyperalgesic peptide (Lattanzi et al., 2012)
Bos primigenius L.	*tehen*	U	Milk poured on the herb of *Urtica dioca* for bite of *Vipera berus* Milk poured on the wound against bite of *Mustela nivalis* Children hung above boiled milk with their head downwards to let the snake out through the mouth if a snake is inside the children Soft bone for dogs to prevent madness (“hard bone can causes madness”)	17 14 8 11	As curd for furuncle and purulent wound; rubbed in udder against tension (Kékesi, 1980) No data was found No data was found
Canis lupus f. familiaris L.	kutya	U	Hairs placed on shovel and put in the stove for one night, taken out, and the smoke breathed in against madness	8	Hairs smoked for dog bite, burn hairs in wine for tooth-ache (Sebestyén, 2009)
Canis lupus L.	farkas	G, U	Smoked meat for abscess on the back and side of cows	17	Smoked meat consumed for gastrospams and colic, and its smoke inhaled for flatulence of cows (Kóczián et al., 1975); people consume its heart to get courage (Halász, 2005)
Equus caballus L.	ló	U	Hairs for warts as dressing	24	Powdered hairs as abortive (Antalné, 2003); hairs for warts (Halász, 2005)
Gallus gallus domesticus L.	*majorság*	U	Eggs as fodder for cows against low milk production	16	No data was found
Lacerta viridis Laur.	*gyík*	U	Eggs soaked in alcohol, milk or vinegar for diphtheria of pigs	11	No ethnomedicinal report was found
Lytta vesicatoria L.	*dühbogár*	G, H, U	Against madness (no more used)	15	Bugs for madness (Vajkai, 1943); nine bugs grounded in milk or brandy, or on bread with jam for madness (Hoppál, 1990); cantharidin as anticancer (Rauh et al., 2007)
Mustela nivalis L.	*menyet*	U	Flayed skin on a stick against bites	12	Flayed skin against bite (Vajkai, 1943); flayed skin for scrubbing of udder to restart the milking (Halász, 2005)
Salamandra salamandra L.	*szalamizra, languszta, étögyék, helyremászó*	U	Caught on the neck with a two-forked device, a white sap is pressed from its back, mixed with spit, and smeared on the tonsils accompanied by countdown from 7	14	Getting in the human body it chews the abdomen (Salánki-Fazekas, 2012)
Vipera berus L.	*cserehéjú kígyó*	U	Flayed skin on a stick against snake bite Inhalation of the smoke of the skin and scrubbing of the nose of the bitten animals	22 9	Flayed skin for scrubbing of swollen udder (Boér, 1901; Vajkai, 1943); myths and beliefs (Fita et al., 2010)

Study area: G, Ghimes-valley; H, Homorod-valley; U, Uz-valley.

Table 4
Beliefs and uses of various substances in the studied Transylvanian regions.

Used material	Study area	Disease, phenomenon	Administration route	Frequency	Some previous data on ethnomedicinal uses
Ash	U	Cataract	Blown into the eyes of cows	9	With salt for wound in ethnoveterinary; smeared on the forehead against bewitchment (Kékesi, 1980)
Bran blessed	U	"Bad milk" and kicking of cow during the milking	Fodder	13	For constipation in ethnoveterinary (Kékesi, 1980)
Cooking oil	U	Low milk production	Fodder for cows	8	No data was found
Knife	U	"Szépasszony"	Thrown into the wind to prevent the debilitation of children caused by "szépasszony"	15	No data was found
Red band or bunch	G, U	Against bad spirits	Bound for plants and animals with incantations	26	No data was found
Smut	U	Pox in children	Smeared on the forehead	9	Smeared on the forehead against bewitchment (Kékesi, 1980); smut of smoked wolf's meat with water for gastrospasm and colic (Kóczián et al., 1975)
Stone	U	Kicking of cow during the milking	Milk can be flown through the hollow stone collected from the stream, and then poured away or given for dogs	8	No data was found
		Abscess of udder	As scrubber	14	
Sugar	H, U	Cataract	Blown into the eyes of cows	9	For cataract of horses (Kóczián et al., 1975; Kékesi 1980)
Vinegar	U	Fever, inflammation	Washing the whole body surface; evaporation reduces the fever	11	For rumination (Kékesi, 1980)
Water	U	Bite of *Vipera berus*	Washing with extract of *U. dioica*	16	For purification, in blessed form against bad spirits (Kékesi, 1980)
		Against bad spirits	Blessed together with *Allium sativum* for horses	9	
		Madness	With salt as washing	7	
		Warts	Collected from the upper part of a stum as washing for one or two weeks	8	

Study area: G, Ghimes-valley; H, Homorod-valley; U, Uz-valley.

vesicatoria L. for madness has been mentioned earlier in the selected villages and in several previous reports, but this custom had disappeared completely by the time of our study (Table 3). We could not find records for madness treatment using plants in contrast to earlier data, as it was the case of the use of *Sorbus aucuparia* L. (Rab, 1982).

The majority of other materials of different origin use was described in the Uz-valley, mostly for medicinal purposes (ash, bran, oil, smut, stone, vinegar, and water), or as protective symbols (band, bunch and knife) (Table 4). The stones collected from the stream are rubbed clockwise against the udders accompanied by magical incantations against abscess caused by "*szépasszony*", while chanting: "*They were 7 persons, and 6 ones remain. They were 6 persons, and 5 ones remain…*". When the numbers are all spent at the end of the process, the stone has to be taken back into the stream.

Among our records, only the listed use of sugar was found in earlier reports, in contrast to the other records in our study (Table 4). These materials play a significant role in human and ethnoveterinary medicine recently, as well as in the magical protective rituals at the studied Transylvanian areas.

Conclusion

Traditional use of plants, animals, and other substances are significant components of local health systems and considered as an existing natural resource in the studied Hungarian Csángó and Székely areas in Transylvania. This archaic knowledge could persist due to the poor socio-economic conditions and geographical isolation. The observed rational components of use are commonly completed by traditional

elements including beliefs, magical phrases, and rituals, mostly among the Csángós, who have no written sources of their ancestral magical words, in order to avoid loss of their effectiveness when transmitted to the youth. This phenomenon is considered as a difficulty in these regions because these data will eventually disappear. The reliability and accuracy of the magical data are based on long personal experiences and continuous use, playing an important role nowadays in the human and veterinary medicine in these villages.

The results highlight the ethnobotanical, ethnopharmacological and cultural relevance of the listed data provided by indigenous people. Thus, further surveys will be necessary to broaden our knowledge of the local ethnomedicine. There is also is an urgent need for conservation of the rich traditional practices to prevent their extinction in Transylvania.

Authors' contributions

NP and KBF contributed in plant sample collection and identification, confection of herbarium specimens and data analysis. NP drafted the first version of the paper. TB and DC contributed to data analysis and comparison with references. SS and DC contributed to critical reading of the manuscript. All the authors have read the final manuscript and approved the submission.

Conflicts of interest

The authors declare no conflicts of interest.

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