

INTEREST OF POPULATION OF THE MALÁ FATRA MOUNTAIN IN MEDICINAL HERBS

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ABSTRACT

This paper deals with the evaluation of the interest of the Malá Fatra population on medicinal herbs. Aim was to determine relationship of local citizens of three submontane rural villages: Kľačno, Vrúčko and Kláštor pod Znievom which are situated in southern part of mountains Malá Fatra about collection, home cultivation and usage of medicinal herbs in everyday life and for healing illnesses. Interest of the local population about this issue we assessed by the form sociological survey. The every questionnaire consisted of 17 basic questions. The final results from sociological survey can be in the future used for needs of landscape-ecological research with focusing on ecologically optimal management of medicinal herbs and also for creation of promotional materials in the context increase of interest of citizens about cultivating and using medicinal herbs not only for personal use but also for providing permanent income from this activity. This paper is in its nature oriented on perpetually sustainable utilization and rational land management of agricultural region.

KEY WORDS

Plants. Malá Fatra. Collecting medicinal herbs. Cultivating medicinal herbs. Sociological research.

Introduction

History of medicinal herbs is present since nobody can remember. They go as far as prehistoric ages, when people prepared various food from medicinal herbs, which first provided nourishment and a bit later were used for healing (Potácel & Muntág, 1991).

In the past Slavonians used for healing well-known plants such as garlic or onion. Garlic is one of the oldest medicinal herbs. Recipe for its use was found even on Sumerian tablets from year 3000 B.C. Today we practically can not imagine a household without garlic, which enriches taste of many meals and in addition has impressive universal healing attributes about which could be written a separate work (Normanová, 2004).

It is scientifically proven, that plant medicines affect organism a lot more sparingly than chemically produced medicine. This fact is even approved by pharmaceutical companies alone which in instruction leaflets of their patented medicine mention that synthetic medicine, including their combinations, can have not only positive effect on human organism but paradoxically many (unwanted) side effects too (Day, 2008).

Based on statistics of World Health Organisation (2002) up to 80 % of world population trust medicine of plant origin more. Plant remedy contains such a gently balanced mixture of substance which can not be created in laboratory by any pharmacologist. Today there are practically no known illnesses except of surgical character that can not be healed by naturally occurring plants (Velgos & Velgosová, 1988).

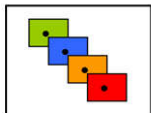
Medicinal herbs belong to ecosystem services and are used not only in medicine but also in field of gastronomy for seasoning of meals and also in cosmetic and fragrance industries for production of shampoos, shower gels, repellents, flavour candles, cleaning agents, healing drinks etc. (Ferry-Swainson, 2002).

As we can see their application in society is really large and therefore in present time in agro-enterprise are more frequently asked questions related to ecologisation of farming in agricultural region by means of founding of new arable areas for medicinal herbs (Habán et al., 2007).

In order to objectively consider if in the future it will be meaningful to tie up to complex regional-ecological research in region of Malá Fatra, based on which we would determine suitability of cultivation of the most requisite medicinal herbs in given climate and soil-ecological conditions and simultaneously suggest a detailed methodics for ecological way of cultivation of selected assortment of medicinal herbs species, we defined two main goals:

- to evaluate of the interest of citizens about collecting, cultivation and usage of medicinal herbs in everyday life and healing of illnesses,
- to offer total form of information regarding problematics of medicinal herbs in region of Malá Fatra.

Obtained results from sociological research can serve as a foundation for **integrated landscape management**, which represents the main framework for ecologically optimal management of medicinal herbs in region of Malá Fatra (Huba & Ira, 2006).



Materials and methods

Short characteristics of region of interest

Malá Fatra belongs to fatro-tatranian range of base mountains of Western Carpathians and it is the fourth highest mountain of Slovak Republic. Major part of the mountain with exception of ridges is densely forested. Dominant and the most spread wood species is European beech (*Fagus sylvatica*). Forest covers cca 83 % of overall area of region of Malá Fatra (Kollár, 2008).

More than 1000 species of higher plants grow in Malá Fatra. Flora on limestone and dolomite foundation is particularly rich. In the mountain we can observe large number of law protected plants, western-Carpathian and Carpathian endemits and also glacial relicts and carnivorous plants. Floral richness of this region assigns Malá Fatra into the most precious and attractive places in Slovakia (Krajčiová, 2004).

Administratively Malá Fatra mountain extends on area of three regions: Martin, Žilina and Dolný Kubín (Gargulák & Križo, 1980).

Short characteristics of research method

For our sociological survey we used questionnaire method. Sociological survey was realized in months September and November 2011. Questionnaire consisted of 17 questions, of which 15 were closed-ended (respondents circled suitable options) and remaining 2 questions were open-ended.

We distributed overall 150 questionnaires to chosen citizens of submontane municipalities Kľačno, Vrúcko a Kláštor pod Znievom (exactly 50 questionnaires to each municipality). After 5 working days we collected them from citizens. They returned in full complement and all 150 were completely filled.

Obtained information were processed and evaluated in tables form. The most important results were expressed numerically and percentage, which provided consistent and transparent outputs from the sociological survey.

Criteria for choosing of place of interest

When choosing model area we appealed to **three main criteria**:

abiotic criterion: regarding varied assortment of wildly growing medicinal herbs, which are located in mosaic of various landscape types of Malá Fatra (woodland, agricultural, law protected areas etc.) we presume suitable abiotic conditions of Malá Fatra for occurrence and also potential cultivation of chosen medicinal herbs species,

sociological criterion: we decided to realise anonymous questionnaire in Malá Fatra area because similar research of this problematics have not been performed yet,

criterion of secondary research: in case of discovering positive results from sociological survey in the future we plan to realise analysis of abiotic conditions of model region for concretization of possibilities for cultivation medicinal herbs suitable for the area of Malá Fatra.

Results

General characteristics of selected company of participant on questionnaire survey

Questionnaire survey was realised in frame of selected company of citizens from three municipalities located in area of Malá Fatra. From overall number 3177 citizens of municipalities Kľačno (1 110 c.), Vrúcko (462 c.) and Kláštor pod Znievom (1 545 c.) participated 150 respondents who represents 4,8 % from overall number of rustic population of selected municipalities.

Table 1 Numerical and percentage evaluation of the structure of respondents by gender, age and education

Gender	81 women 54 %	69 men 46 %	•	-
Age	25 respondents up to 30 years 47,33%	71 respondents from 30 to 50 years 47,33 %	54 respondents over to 50 years 36 %	-
Education	14 respondents primary education 9,33 %	69 respondents vocational education 46 %	57 respondents graduate education 38 %	10 respondents higher education 6,67 %

Interpretation of questionnaire survey

In this part we introduce evaluation of questions questionnaire which are listed on the end this paper in supplement No. 1 *Questionnaire*.

The following table provides a comprehensive overview of the most important results from the sociological survey that offer complex information regarding the interest of the citizens of Malá Fatra on medicinal herbs.

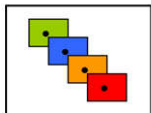
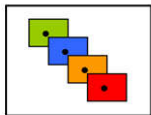


Table 2 Overview of the most important results from the sociological survey

Question No.	The basic results from questionnaire on a sample of 150 respondents
1	On the question positively answered 66,67 % women and 55,07 % men. From the aspect of age structure the most interested in problematics of medicinal herbs were respondents above age of 50 (88,89%).
2	All 150 respondents answered positively on this question.
3	48,67 % respondents circled option a) yes, regularly. Option b) circled 45,33 % and 6 % of respondents stated, that they do not use medicinal herbs. Medicinal herbs are the least regularly used by respondents under 30 years old (12 %). On the contrary, medicinal herbs are the most regularly used by respondents above 50 years old (70,37 %). From the aspect of education 60 % of higher educated and 50 % of graduate respondents circled option b).
4	We discovered that respondents from medicinal herbs the most often use leaves and flowers – simultaneously. This option was marked by 36 % of respondents. Some citizens even stated that they use all parts of medicinal herbs (e.g. leaves, flowers, fruits, toppings, roots and underground parts).
5	68,7% of respondents stated that they mostly prepare herbal tea from medicinal herbs. Respondents also often stated combination: „teas + other“, where they added: honey, brier jam, elderberry syrup, blackberry wine etc. Some even circled all options, e.g. they prepare from medicinal herbs: teas, poultices, herbal baths, ointments (mostly marigold ointment), oils (mostly St. John’s wort oil), but also others, such as jam, pepper, wine etc.
6	Option a) was circled by 52,67 % respondents, option b) 42 % of respondents and option c) 5,33 % of respondents. In the aspect of education a) was marked by almost 60% of graduate respondents and option b) was marked by 60 % of respondents with higher education. In the aspect of age medicinal herbs are regularly used mostly by respondents above 50 years old.
7	Respondents obtain medicinal herbs mostly by collecting in nature. Medicinal herbs are obtained this way by 50 % of respondents above 50 years old. The result shows that respondents are less involved in cultivating of medicinal herbs. Respondents up to 30 years old agreed at 36 % on obtaining medicinal herbs by purchase.
8	Respondents stated that in region of southern Malá Fatra they mostly gather these medicinal herbs: common agrimony (<i>Agrimonia eupatoria</i> L.), brandy mint (<i>Mentha x piperita</i> L.), thyme (<i>Thymus serpyllum</i> L.), small-leaved lime tree (<i>Tilia cordata</i> Mill), chenille plant (<i>Achillea millefolium</i> L.), wild brier (<i>Rosa canina</i> L.), black elder (<i>Sambucus nigra</i> L.), cowslip (<i>Primula veris</i> L.) and field horsetail (<i>Equisetum arvense</i> L.).
9	Medicinal herbs are regularly cultivated by almost 20 % of women and 16 % of men. Regarding age 76 % of respondents up to 30 years old do not cultivate medicinal herbs. Regarding education up to 80 % of higher educated respondents are by no means involved in cultivation of medicinal herbs.
10	Respondents stated that in their garden they mostly cultivate these medicinal herbs: camomile (<i>Matricaria recutita</i> L.), sweet balm (<i>Melissa officinalis</i> L.), pot marigold (<i>Calendula officinalis</i> L.), kitchen garlic (<i>Allium sativum</i> L.), common parsley (<i>Petroselinum crispum</i> Mill.) and onion (<i>Allium cepa</i> L.).
11	80 % of respondents circled option a) accidental and rest 20 % option b) intentional. In terms of age medicinal herbs are cultivated mostly by respondents above 50 years old. 90 % of respondents with higher education agreed that they cultivate medicinal herbs accidentally in their garden.
12	All 150 respondents circled option a) small-scale. This means that not even one respondent cultivate medicinal herbs on area bigger than 20 m ² .
13	Many respondents could not evaluate demand for cultivation of medicinal herbs in Malá Fatra region. In terms of age up to 52 % of respondents under 30 could not evaluate it. Respondents with higher education agreed at 60 % that there will be demand for cultivation of healing herbs in Malá Fatra region.
14	Only 36,67 % of respondents circled option a). On the contrary, 28,67 % of respondents stated that they do not have enough information about options and means of cultivation of medicinal herbs and 34,66 % of respondents circled option c).
15	Option a) circled 67,90 % of women and 57,97 % of men. In terms of education up to 80 % of respondents with higher education agreed that they want to learn more information about promoting of cultivation of medicinal herbs within the scope of EU.
16	Option a) was circled by only 24,67 % of respondents. Option b) by 23,33 % of respondents and option c) by 52 % of respondents. The result further implicit that mostly women are interested in cultivation. In terms of age the highest interest in cultivation showed respondents from 30 to 50 years old.
17	With establishment of centre will agree 47,83 % of men and 55,56 % of women. In terms of age with establishment will agree 60,56 % of respondents in age from 30 – 50. 20 % of respondents up to 30 years old circled option c) I do not know. In terms of education 70 % respondents with higher education will agree with establishment of centre.



Discussion

Area of Malá Fatra offers suitable geographical, soil and climate conditions for grow of medicinal herbs which are largely occurring. By the form of representative sociological survey in selected municipalities of Malá Fatra we discovered the citizens' relationship to medicinal herebs.

In survey we focused on searching for answers to questions from the field of interest, such as:

- Which species of medicinal herbs are mostly gathered by native citizens in selected municipalities?
- Which species of medicinal herbs do you cultivate the most often?
- Do citizens use medicinal herbs to cure illnesses?
- Which parts of medicinal herbs citizens use the most often?
- Are citizens sufficiently informed about the problematics of medicinal herbs? Etc.

Overall 150 respondents participated in the survey. We can also presume that if more citizens participate in the survey, we will obtain more detailed final sample and of higher quality.

From evaluation of questionnaires we discovered that citizens of municipalities Kľačno, Vríčko a Kláštor pod Znievom prefer usage of natural medicine because they use medicinal herbs rather often. We also confronted this result with other works which are dealing with research of citizens' interest in medicinal herbs in municipalities Očová and Beňuš. From results of these works it is evident that citizens of rural municipalities Očová and Beňuš also use medicinal herbs for healing illnesses rather often (Dorotová, 2012 & Rodaničová, 2013).

From interpreted results we also discovered that citizens of Malá Fatra have rather lower interest in cultivation of medicinal herbs than we expected. Interest in cultivation of medicinal herbs which would be covered with support from EU expressed only 25 % of questionnaire respondents. On the other hand, up to 52 % of respondents could not decide if they would like to cultivate medicinal herbs in the future. This result can be influenced by absence of information about cultivation of medicinal herbs and options of utilizing finances from EU funds. In confrontation with other works which were dealing with research of interest of citizens in medicinal herbs we discovered markedly higher interest of respondents in cultivation of medicinal herbs (Dorotová, 2012 & Rodaničová, 2013).

On question whether citizens would like to be more informed about options of cultivating medicinal herbs almost 65 % of respondents answered positively. Based on this result we assume that citizens of Malá Fatra would be interested in cultivation of medicinal herbs covered by support from EU but they lack informedness.

For this reason in municipalities of interest we suggested to increase level of informedness of citizens by various methods such as: by form of organizing untraditional expositions of medicinal herbs and teas, tasting samples, gabfests and educational seminars on which citizens would learn more about options of ecological cultivation of medicinal herbs and about options of usage of donations from structural funds of EU.

In the future we can interlock results of sociological research to question of optimal landscape-ecological organization of region, which creates foundation for ecological management of cultivation of medicinal herbs. (Miklós, 2009). I further address this option in „Conclusions“.

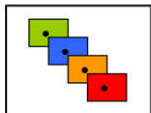
Conclusions

In this paper we dealt with evaluation of interest of citizens of Malá Fatra about medicinal herbs. Information which we obtained from sociological survey of local citizens of three submontane municipalities makes ideal foundation for possible future ecologization of farmstead utilization of region (Brabenec & Borik, 1990).

From survey which we realized in southern part of mountain Malá Fatra we discovered following:

- 61,33 % of respondents are actively interested in problematics of medicinal herbs,
- 68,67 % of respondents prepare herbal tea from medicinal herbs the most often,
- 52,67 % of respondents uses medicinal herbs for healing of diseases – regularly,
- citizens most often obtain medicinal herbs by gathering in nature
- on the contrary, they are less devoted to cultivation of medicinal herbs and therefore we suggest supporting of informedness about options of cultivation of medicinal herbs in Malá Fatra area,
- not even one respondent cultivates medicinal herbs on area larger than 20m², therefore we suggest to citizens cultivation of medicinal herbs on larger areas (large-scale cultivation),
- future cultivators could also contribute to their financial situation, e.g. by exporting of their medicinal herbs to tea-houses, pharmaceutical procurement centres etc.

Based on the results of sociological research we interpret that in region of Malá Fatra we observed demand for medicinal herbs on the part of citizens. From this emerges the need to consider ecological and sparing options of utilization of agricultural soils. Cultivation of medicinal herbs in combination with cultivation of energetic crops or plants intended for industrial and technical purposes offer great opportunity to support plant production in selected regions of Slovakia (Pekárová, 2009).



That is the reason why in adjacent cadaster municipalities of Malá Fatra we in near future plan to realise complex landscape-ecological research aimed on detailed analysis of abiotic conditions of surroundings for needs of determination of limiting factors which will be taken into account while choosing optimal areas for potential cultivation of selected species of medicinal herbs (Miklós, 1990).

Analytical indicators will be needed for landscape-ecological synthesis, interpretations and evaluation. The result will be suggestion of framework spatial optimization of utilization of region for cultivation of selected assortment of medicinal herbs which based on landscape-ecological materials about region can continuously be updated and supplemented based on requirements on the part of citizens (Offertálerová, 2013).

From results of landscape research we will obtain high quality inputs into decision making processes regarding optimal organisation and utilization of landscape area in context of protection and cultivation of medicinal herbs in various landscape types of Malá Fatra with emphasis on agricultural region (Miklós, 2009).

Acknowledgement

Here we would like to give thanks to citizens of Malá Fatra for cooperation and time which they invested into completing individual questionnaires which dealt with problematics of medicinal herbs. Questionnaires helped with processing of results and defining of future needs for local citizens including realization of landscape-ecological research in Malá Fatra.

Supplement No. 1

Questionnaire

Dear Mr., (Ms.)

*I am a student of Technical University in Zvolen, **UNESCO-Chair for Ecological Awareness and Sustainable development**. I want to ask you to collaborate in realisation of the survey: „Interest in cultivation of medicinal herbs in municipalities Malá Fatra in connection with ecologization of commercial use of land“.*

The questionnaire is anonymous and your answers will be used in scientific paper.

I ask you to circle only one option from the choice, or write an adequate answer.

I thank you in advance for your understanding and collaboration.

Gender: male / female

Age category: up to 30 years old/ from 30 to 50 years old/ above 50 years old

Education: primary/ vocational/ graduate/ higher education

• **Are you interested in problematics of medicinal herbs?**

- yes
- no
- I do not know

2. Do you know any medicinal herbs species?

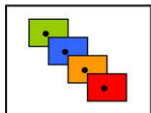
- yes
- no
- I do not know

3. Do you use medicinal herbs?

- yes, regularly
- yes, occasionally
- no

4. Which parts of medicinal herbs do you use the most?

- a) leaves
- b) flowers
- c) fruits
- d) toppings
- e) roots & underground part



5. What do you mostly prepare from medicinal herbs?

- a) herbal tea
- b) poultices
- c) herbal baths
- d) ointments & oils
- e) other (fill in)

6. When healing illnesses, do you besides medicine of chemical origin use medicinal herbs?

- a) yes, regularly
- b) yes, occasionally
- c) no, I do not use medicinal herbs

7. How do you obtain medicinal herbs?

- a) collecting in nature
- b) cultivating
- c) purchase
- d) combines (purchase + collecting, resp. purchase + cultivating or collecting and growing)

8. State which medicinal herbs do you gather in surrounding of your municipality:

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9. Do you cultivate medicinal herbs in your garden?

- a) yes, regularly
- b) yes, occasionally
- c) no, I do not cultivate medicinal herbs

10. If you do cultivate medicinal herbs, state which do you have in your garden:

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11. Cultivation of medicinal herbs in your garden is:

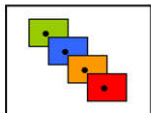
- a) random
- b) intentional

12. What is the size of area on which you cultivate medicinal herbs?

- a) small-scale (1 - 20 m²)
- b) middle-scale (20 - 100 m²)
- c) large-scale (above 100 m²)

13. Do you think that people who live in Malá Fatra region and in its surrounding will be interested in cultivation of medicinal herbs?

- a) yes
- b) no
- c) I cannot tell



14. Do you have enough available information about options and means of cultivation of medicinal herbs?

- a) yes
- b) no
- c) I cannot tell

15. Would you like to learn more information about promotion of cultivation of medicinal herbs within the scope of EU?

- a) yes
- b) no

16. Would you be personally interested in their cultivation?

- a) yes
- b) no
- c) I do not know

17. If you were interested in cultivation in large-scale, would you agree with establishment of centre for purchase and processing of medicinal herbs?

- a) yes
- b) no
- c) I do not know

REFERENCES

- Brabenec, M. & J. Borík, 1990. Pestovanie liečivých rastlín a koreninových rastlín na malých plochách. Svépomoc, Praha.
- Day, P., 2008. Rakovina – prečo stále umierame bez poznania pravdy. Credence Publications, Brezno.
- Dorotová, A., 2012. Posúdenie vhodnosti vybraného územia pre pestovanie liečivých rastlín na príklade katastrálneho územia Očová. Technická univerzita vo Zvolene, Zvolen.
- Ferry-Swainson, K., 2002. Rumanček. Ottovo nakladateľstvo, Praha.
- Gargulák, J. & V. Križo, 1980. Malá Fatra: turistický sprievodca ČSSR. Šport, Bratislava.
- Habán, M., J. Boroš, K. Černá, 2007. Manažér pestovania liečivých rastlín. Slovenská poľnohospodárska univerzita, Nitra.
- Huba, M. & V. Ira, 2006. Integrované prístupy ku krajine a koncepcia trvalo udržateľného rozvoja. In: Izakovičová, Z. (ed.): Smolenická výzva III. Integrovaný manažment krajiny – základný nástroj trvalo udržateľného rozvoja. Ústav krajinnej ekológie Slovenskej akadémie vied, Bratislava.
- Kollár, D., 2008. Malá Fatra. Dajama, Bratislava.
- Krajčiová, I., 2004. Zaujímavé floristické nálezy z Krivánskej Malej Fatry. Slovenská Botanická Spoločnosť 34(1): 26–61. Materials of the World Health Organisation. 2002.
- Miklós, L., 2009: Integrovaný manažment krajiny a jeho nástroje. Životné prostredie 43(6): 315–322.
- Miklós, L., 1990: Ekologické plánovanie krajiny LANDEP I. Učebné texty. Slovenská technická knižnica pre Ministerstvo životného prostredia SR a Krajinnoekologické centrum Banská Štiavnica, Bratislava.
- Normanová, J., 2004. Cesnak a cibuľa. Slovart, Bratislava.
- Offertálerová, M., 2013. Integrovaný manažment krajiny (IMK) – novodobá koncepcia starostlivosti o krajinu. Enviro 9: 1–7.
- Pekárová, E., 2009. Alternatívne možnosti využívania poľnohospodárskych pôd Slovenska. Agroporadenstvo, Bratislava.
- Rodaničová, M., 2013. Možnosti zberu a pestovania liečivých rastlín vo vybraných oblastiach Slovenska. Technická univerzita vo Zvolene, Zvolen.
- Ružička, M. & L. Miklós, 1982. Landscape-ecological Planning (LANDEP) in the Process of Territorial Planning. Ecology 1: 297–312.
- Velgos, Š. & M. Velgosová, 1988. Naše liečivé rastliny. SPN-Mladé letá, Bratislava.

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