

MEDICINAL PLANTS AS INDICATORS OF GRASSLAND BIODIVERSITY

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ABSTRACT

A study has been made to identify the medicinal plants on the existing Hungarian grasslands. Sixty-three plants have been found to possess medicinal effects. Twenty-six, 15 and 22 species are for internal, internal or external and external use, respectively. This result reflects the low management intensity of grasslands in the country, as well as the species richness of semi-natural grasslands. It is suggested that the number of medical plants on the grassland, - in general - can also be used as an indicator of grassland biodiversity.

KEYWORDS

medicinal plants, biodiversity, grassland, sward composition, conservation value

INTRODUCTION

Grasslands, as the most versatile croplands in the World, may support large number of different plant and animal species. The number of plants are determined by ecological conditions (climate, topography, soil) and human activities, such as seeding, fertilizing, watering, tilling, grazing and cutting. Over the last few decades, there have been growing social demands and scientific interests to maintain or increase the conservation value of cultivated grasslands (Green, 1990; Nösberger et al., 1994; Rychnovska et al., 1994), along with their agricultural value. The sward composition of different grasslands consists of grasses, legumes, herbs and, in many cases, of shrubs and trees, as well. The agricultural value of a grassland is based on the feeding and nutritive value of the companion plant species, mainly grasses and legumes. The conservation value of a grassland is determined by the number of species available in the sward, and is often expressed as grassland biodiversity. In general, conservation value, or grassland biodiversity, shows negative correlation to the level of management intensity. A recent publication on the species number of some more frequent grassland types of Hungary (Vinczeffy, 1993) has shown that Hungarian grasslands are rich in plant species. Forages from grasslands, consumed by grazing or stubble feeding, have the highest nutritive value compared to other feeds. It is due to the very mixed contents of different ingredients found in the forage. In this respect, medicinal plants contribute remarkably to the nutritive value of the feed from grasslands. Thus, the purpose of a survey was to identify the medicinal plants in Hungarian grasslands, as their number in the sward may reflect the conservation value of the sward.

MATERIALS AND METHODS

There are detailed records on the sward composition investigations of the different grasslands of Hungary. This was the data bank from which the medicinal plants have been identified, using some relevant books on the medical effects of plants, such as Soó and Jávorka (1951); Rápóti and Romvári (1991); Dános (1992). In the study, the medicinal plant species, their usages, their active ingredients, their curative effects on different organs or diseases in humans and animals have been identified, collected and recorded. In this paper, the list of identified medicinal plants for internal, internal or external, and external use has been published.

RESULTS AND DISCUSSION

So far, 63 grassland component plant species have been found which have medical effects in human or animal health (Table 1). Of these, 26, 15 and 22 species are for internal, internal or external, and external use, respectively. This relatively large number of medicinal plants

in grasslands are not surprising in light of Hungarian conditions. It is well known that high management intensity leads to the loss of conservation value (Wilkins and Harvey, 1993), ecological fitness (Dijkstra, 1991), or floristic diversity (Rychnovská et al., 1994). As most of the Hungarian grasslands are extensively managed (Nagy, 1996), these grasslands could preserve their species richness. According to Vinczeffy (1993), most of the existing grasslands can be considered as native, or semi-natural grasslands, due to the poor ecological conditions on the grasslands. Some of the medicinal plants listed in the table have been examined as to their microbiological characteristics (Zsupos Oláh et al. 1996), and proved to have bactericide or fungicide effects, which also supports the results of this study.

CONCLUSION

The study has found large number of medicinal plants in the Hungarian grasslands, which is probably due to the low management intensity of grasslands. On the basis of the correlation between species number and biodiversity, the number of medical plants can also be used as an indicator for grassland biodiversity.

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Table 1

Medicinal plants for internal, internal or external and external use from Hungarian grasslands

<u>For Internal Use</u>	<u>For Internal or External Use</u>	<u>For External Use</u>
Acorus calamus L.	Althaea officinalis L.	Achillea millefolium L.
Bellis perennis L.	Angelica archangelica L.	Agrimonia eupatoria L.
Bryonia alba L.	Articum lappa L.	Alchemilla vulgaris L.
Carum carvi L.	Aristolochia clematitis L.	Alkanna tinctoria (L) Tausch.
Elymus repens L.	Armoracia rusticana G.M. Sch.	Anthyllis polyphylla Kit.
Eryngium campestre L.	Arnica montana L.	Centaureum minus Mönch.
Frangula alnus Mill.	Artemisia absinthium L.	Chrysanthemum cinerariaefolium (Trev.) Vis.
Fraxinus excelsior L.	Chrysanthemum vulgare Bernh.	Echium vulgare L.
Galium verum L.	Equisetum arvense L.	Glechoma hederacea L.
Gratiola officinalis L.	Mentha longifolia (L) Nath.	Helleborus sp. L.
Gysophylla paniculata L.	Pimpinella saxifraga L.	Hypericum perforatum L.
Marrubium vulgare L.	Plantago sp. L.	Linaria vulgaris Mill.
Menyanthes trifoliata L.	Salvia sp. L.	Lythrum salicaria L.
Mercurialis annua L.	Senecio vulgaris L.	Matrocaria chamomilla L.
Oenanthe aquatica (L) Lam.	Trigonella foenum graecum L.	Melilotus officinalis Desr.
Peucedanum officinale L.		Nigella arvensis L.
Phyllitis scolopendrium (L) Newm.		Origanum vulgare L.
Polygonum bistorta L.		Polygonatum sp. Mill.
Potentilla erecta (L) Rausch.		Pulicaria sp. Gärtn.
Rhamnus catharticus L.		Scrophularia nodosa L.
Rumex obtusifolium L.		Symphytum officinale L.
Salix alba L.		Veratrum album L.
Saponaria officinalis L.		
Teraxacum officinale Web.		
Urtica dioica L.		
Verbena officinalis L.		
Number of species		
26	15	22