

Investigation on health promoting medicinal plants to breeding animals

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Abstract

Herbivores prefer certain substances for self-medication whereas avoid others. Traditionally in many parts of Greece, breeders used to provide specific plants to their livestock for medicinal purposes. This knowledge and wisdom is getting extinct as young farmers prefer the use of the fast-acting medical substances rather the traditionally used medical plants. The purpose of this study was to investigate and record all traditionally used plants for medical purposes by farmers as well as the grazing preference of certain plant species by animals. For this aim an adequate number of questionnaires was prepared and distributed in livestock breeders of many rural parts of Greece. The results suggest that breeders from diverse areas react differently concerning the use of certain feed and plant species as medicine to face health problems of their livestock. Young farmers are more willing, but less aware than the elder ones in the use of plants for medicinal purposes to their livestock. The use of certain plants is related to the location of the farm. However, there are certain plants that are commonly used throughout different areas. Plants are used for many purposes such as tumours, bloating, cold, fever, intestinal problems, respiratory infections, inflammation, and birth complications as well as to improve the animal welfare.

Key words: diet selection, herbs, unconventional feed, Greece

Introduction

For thousands of years, a wide variety of herbs have been used by animals and humans. Sometimes, the animals lead scientists in the discovery of molecules of interest as, many mammals, choose the same plant species not only to feed but also to heal themselves. For instance, a Navaho Indian legend describes how bears teach humans on the use of *Apiacea* sp. for healing purposes (Potier and Chast 2002). Researchers studied Kodiak bears on the way they chew *Apiacea* sp. roots and anoint themselves with the sticky mixture produced. This mixture is composed, among others, of coumarins, which are used for the treatment of skin, heart and brain diseases (Potier and Chast 2002). The anthropologist Richard Rangkam studied chimpanzees in Tanzania and noticed that animals sometimes would travel long distances to find and consume *Aspilia mossambicensis* leaves, which contain an antiparasitic substance (Potier and Chast 2002). Some apes of central Africa would consume certain plant species exclusively during the reproduction period (Potier and Chast 2002).

Female African elephants would cross over 20 kilometres to consume leaves of *Borraginaceae* sp. a few days before giving birth (Potier and Chast 2002). Herbs and spices are mentioned human history used for medicinal purposes (Anonymus 2012). Valuable knowledge from the father of medicine, Asclepius as well as from Kyron, Hippocrates, Theophrastus and others, on pharmaceutical plants is described in many ancient Greek writings (Page et al. 1968). Even if herbs have been widely used for medicinal purposes, there is only limited scientific research on the specific subject. In one of the few available studies, Mothana et al. (2012), used *Loranthus regularis* in carrageenan-induced rat oedema and pyrexia in mice and confirmed its use as a potential anti-inflammatory and antioxidant agent. In another study, Villalba et al. (2010) offered to sheep with gastrointestinal nematode infection feed of alfalfa or of a alfalfa:tannins mix. The researchers noticed that parasitized lambs increased their intake of alfalfa:tannins which self-medicated them against parasites.

In many parts of Greece, livestock breeders traditionally provide specific plants to their animals for medicinal purposes. This knowledge and wisdom is getting extinct as young farmers prefer the use of the fast-acting medical substances rather the traditionally used medical plants. The purpose of the certain study is to investigate and record all traditionally used plants for medical purposes by the breeders as well as the preference of certain plant species by grazing animals.

Materials and methods

An adequate number of questionnaires was prepared and distributed to livestock breeders of many rural parts of Greece. Specifically, 50 livestock breeders were chosen from two mountainous mainland prefectures (Eurytania and Trikala), from three islands (Kefalonia, Icaria and Evia), and two lowland prefectures, two in mainland (Fthiotida and Attica) and one in Peloponnesus (Argolida). The questionnaire had 14 simple closed-type questions and only 5 requested for written additions (open type). The requested information was the age, gender, occupation (full or part time, years, traditional or new), livestock species, attendance of an educational seminar or a development program, grazing system type (village or flock system, intra or inter transhumant system, no specific type), livestock feed, observation of grazing of a specific plant in case of illness by the animals, the provision of a specific feed by the farmer in case of illness, the reasons for giving a specific feed, if the breeders were aware of pharmaceutical plants not present in their area and if they were willing to be informed on

pharmaceutical plants for specific purposes. All questionnaires were anonymous.

Results and Discussion

Most of the breeders were male (average 70%), mainly in the mainland regions as opposed to the islands and the Attica (the prefecture with the capital Athens). Most of the breeders were over 60 years old (54%) and only 20% were in the age group of 21-40 mainly in Trikala prefecture. They were occupied in their farms for an average of 29 years, mostly part time (67%), and for personal use of the products (58%). Their land-enterprises were mainly inherited by their family (62%). All breeders from Argolida bought their farms and were full-time occupied for commercial use of the land. Livestock species were sheep (27%), goats (20%), poultry (17%), rabbits (8%), pigs (6), cattle (5%), horses (4%), bees (3%) and donkeys (2). Mostly of the above animals are freely grazing (43%) without any specific pattern. Sheep dominate in the mountainous Eurytania and mainland Trikala, in contrast to goat's dominance in Argolida and the islands. Only few of the questioned (18%) had attended an educational seminar or were included in a developmental program. Young farmers were more willing than the elder ones in the use of plants for medicinal purposes to their livestock. However, the young were facing their farms more as an enterprise, in comparison to the elder ones who seem to be more sentimentally connected to their animals.

Free grazing in state-owned land provided food for the livestock and, depending on the region, composed of corn (33%), fruits (21%), *Gramineae* species (16%), not specified (17%), oats (14%), barley (13%), *Trifolium* species (13%), hay (11%), *Quercus* spp. (14%), *Pistacia* spp. (10%), wheat (9%), *Arbutus* spp. berries (6%), Vegetables (6%), *Ceratonia siliqua* (5%), soy (5%), Berries (4%), *Erica* spp. (2%), *Salvia fruticosa* (2%), Maple (1%).

Only 4% of the breeders had noticed browsing of specific plant species when the animals had symptoms of illness and 8% had informed about the existence of pharmaceutical species in other areas than theirs. For example, *Cynodon dactylon* Pres. was mentioned to be used for self medication by animals, and specifically by dogs for parasites. Even though the mechanism of such effect is not scientifically known for all species, the use of herbs for the self-medication of animals has been proven for lambs and kids (Villalba et al. 2010, Burke et al. 2011). Interestingly, a 6% of the farmers from the mountainous Eurytania and Argolida were not willing to be informed of pharmaceutical plants, in contrast to all (100%) of the breeders from the other regions.

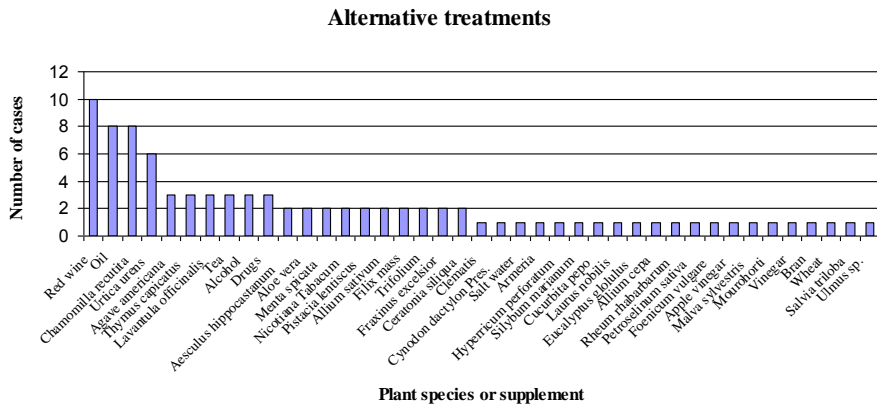


Figure 1. Plant species or other supplement used for alternative treatment

Red wine is widely used in animals as an alternative supplement for medicinal purposes followed by oil (Figure 1), *Chamomilla recutita* and *Urtica dioica* (nettle). These alternatives are also used for the treatment of human diseases. Most of the species used are area-dependent, meaning that they are only used in specific regions. The species used in at least two areas were oil, wine, *Aesculus hippocastanum* (horse-chestnut), *Aloe vera*, thyme, lavender, *Pistacia lentiscus* (mastic tree), garlic, tea, nettle, and camomile.

There is a great variety of plants used for pharmaceutical purposes and for a wide variety of diseases-problems. Most of these are also used for the treatment of human health problems such as the tea. Alipoor and Rad (2012) gave a detailed review on the therapeutical effects of tea (*Camellia sinensis*). Olive oil (*Olea europaea*) is used in many cases, and for humans mainly for their skin treatment. *Hypericum perforatum* (St. John's wort) is a very popular herb, used for a variety of purposes (Table 1.). As Solórzano-Santos and Miranda-Navales (2011) mentioned, essential oils from aromatic herbs possess antibacterial properties and its use as antiseptics is promising.

Conclusions

Herbs, plants and their products are widely used for the medication of animals. Certain factors seem to affect the choice of a particular plant such as the location of the farming unit, the gender and the age of the breeder. The alternative use of plant species is very promising and should be further investigated.

Table 1. Plant species provided to animals for pharmaceutical purposes

Inflammatory	<i>Allium cepa</i> Apple vinegar <i>Petroselinum sativa</i>
Antiparasitic (internal)	<i>Allium sativum</i> <i>Aloe vera</i> <i>Armeria</i> <i>Cynodon</i> <i>Dactylon</i> Pres. <i>Cucurbita pepo</i>
Anuria	<i>Aesculus hippocastanum</i>
Bloating	<i>Chamomilla recutita</i> , Alcohol (tsipouro), Wine (red)
Burns	<i>Hypericum perforatum</i> oil
Cold	<i>Allium sativum</i> , <i>Chamomilla recutita</i> , <i>Hypericum perforatum</i> oil, <i>Malva sylvestris</i>
Diarrhea	<i>Bran</i> , <i>Tea</i> , <i>Pistacia lentiscus</i> , <i>Thymus capicatus</i> , <i>Ulmus</i> sp.
Dystocia	<i>Bran</i>
Epidermal parasites	<i>Apple vinegar</i> , <i>Laurus nobilis</i> , oil
For more milk	<i>Trifolium</i> sp.
For water consumption	<i>Armeria</i>
Haemostatic	<i>Felix mass</i> , <i>Lavantula officinalis</i> , <i>Nicotiana tabacum</i> , <i>Thymus capicatus</i>
Intestinal problems	<i>Aloe vera</i> , <i>Apple vinegar</i> , <i>Armeria</i> sp., <i>Chamomilla recutita</i> , <i>Cynodon dactylon</i> Pres., oil, <i>Salvia triloba</i>
Poisoning	<i>Agave americana</i> , <i>Allium cepa</i> , <i>Lavantula officinalis</i> , <i>Silybum marianum</i> , vinegar, <i>Urtica urens</i>
Psoriasis	<i>Laurus nobilis</i>
Rash	<i>Aloe vera</i> , <i>Hypericum perforatum</i> oil, <i>Laurus nobilis</i> , oil, <i>Thymus capicatus</i>
Respiratory problems	<i>Clematis vitalba</i> , <i>Eucalyptus glolulus</i> , <i>Lavantula officinalis</i>
Stomach ulcer	<i>Malva sylvestris</i> , <i>Salvia triloba</i> , <i>Urtica urens</i>
Tumor destruction	Unknown herb called "mourohorti"
Turning	<i>Fraxinus excelsior</i> , Wheat
Turning up after birth	Wine (red)
Turning up for young sheep	<i>Ceratonia siliqua</i>
Vision problems	<i>Foeniculum vulgare</i> , <i>Salvia triloba</i>
Vomiting	<i>Menta spicata</i> , <i>Ulmus</i> sp.

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