

Potential use of medicinal plants in animal production: results in Brazil

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Abstract

The development of organic animal production systems combined with the problems of drug resistance, as well as the high input costs and the concern about toxic residues in foods have driven the use of plants or their extracts for both the prevention and maintenance of animal health as well for conservation of stored grains. This paper reports the results of the scientific evaluation of anti-parasitic, antibacterial and insecticide action of a group of plants or their extracts in popular use in southern Brazil. The results shown here refer to those plants that have proven a minimum of 70% efficiency in laboratory and / or in the farm. The study covered cattle, poultry, pigs, goats and buffaloes and also stored maize. The positive results lead to the conclusion that the use of plants or their extracts are a good choice for use in veterinary medicine and should continue to be studied.

Introduction

The development of organic livestock production systems combined with drug resistance, the high input costs and the concern about toxic residues in food have strongly driven the use of plants in the prevention and recovery of animal health as well for conservation of grains, in the past decade. Many countries, especially in Asia, Africa and Latin America, have a long tradition in the use of medicinal plants. Brazil has a significant genetic diversity, currently with 55,000 described species which highlights the enormous potential of this country. Popular knowledge about medicinal plants comes mostly from Native Brazilians, and this empirical knowledge is being scientifically confirmed and thereby gaining space and credibility.

In this paper we sum up some studies carried out in Brazil, focusing on several plants that have had their therapeutic efficiency scientifically demonstrated, ensuring their effectiveness.

Material and methods

We selected a group of plants that have had their therapeutic efficiency tested, with good results (minimum 70% effectiveness) on laboratory testing and/or in the farm dealing with some of the main current problems of animal breeding. The following tables show results grouped by the observed activity: antiparasitic and antibacterial effect.

Results

Table 1 shows the plants that have proven action against internal and external parasites of several species of animals. The administration of the plant or its extract in the animals was oral or dermal (baths) (7,11,12, 13,15) .

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Table 1 - Anti-Parasitic action (direct use in animals)

PLANT	USE	ACTION	ANIMALS
<i>Musa sp.</i> (Bananeira*)	Leaves (ingestion)	<i>Haemonchus</i> , <i>Cooperia</i> , <i>Trichostrongylus</i> , <i>Oesophagostomum</i>	Cattle and goat
<i>Azadiractha indica</i> (Nim*)	Powder or oil (ingestion or bath)	Ticks, botfly, hornfly	Cattle and buffalo
<i>Cucurbita spp</i> (Abóbora*)	Dry seeds or infusion (ingestion)	Internal parasites	Chicken
<i>Chenopodiumm brosioides</i> (erva-de-santa-maria*) <i>Allium sativum</i> (Alho*)	Dry leaves (ingestion) Extract (ingestion)	<i>Haemonchus</i> , <i>Ostertagia</i> , <i>Cooperia</i> , <i>Strongyloide</i> <i>Trichostrongylus</i> ,	Sheep

*Popular name in Brazil

Table 2 shows the action of extracts of plants to fight free living larvae of flies. The extracts were placed in the soil where the animals spent the night (5,6).

Table 2 – anti-parasitic action (use in the environment)

PLANT	POPULAR NAME IN BRAZIL	CONTROL OF LARVAE
<i>Azadiractha indica</i>	Nim indiano	94.4%
<i>Nicotiana tabacum</i>	Fumo	90.4%
<i>Allium sativum</i>	Alho	86%
<i>Syzygium aromaticum</i>	Cravo da índia	88.3%

Table 3 shows studies conducted by the Faculty of Veterinary and the Food Technology Institute of Federal University of Rio Grande do Sul - UFRGS, where hydric or alcoholic extracts from various plants have proven their efficacy against pathogenic microorganisms. The results have identified which plants may be used as disinfectants for wounds and udder of animals, as well as antiseptics for milking utensils and ambience collection, handling and processing of food (1,2,3,4,8,9, 14,16,17,18,19).

Table 3 – anti-microbial action

PLANT	POPULAR NAME IN BRAZIL	ACTION ON
Baccharistrimera	Carqueja	<i>Staphylococcus aureus</i> <i>Staphylococcus uberis</i>
<i>Hypericum caprifoliatum</i>	Escadinha	<i>Staphylococcus aureus</i>
<i>Allium tuberosum</i>	Alho nirá	<i>Salmonella, Escherichia coli</i>
<i>Achyrocline satureioides</i>	Marcela	<i>Salmonella, Escherichia coli, Staphylococcus aureus</i>
<i>Llex paraguariensis</i>	Erva-mate	<i>Salmonella, Escherichia coli</i>

Table 4 shows that plant extracts are also useful for the conservation of maize during storage to fight the weevil *Sitophilus zeamais* (10,16).

Table 4 - insecticide action in stored Maize

PLANT	POPULAR NAME IN BRAZIL	USE
<i>Eucaliptus citriodora</i>	<i>Eucalipto</i>	Layers interleaved
<i>Caryophyllus aromaticus</i>	Cravo-da-índia	Layers interleaved
<i>Azadirachta indica</i>	Nim	Oils prayed

Discussion

The reported results show that some plants or their extracts have an efficient antiparasitic, antibacterial and insecticide action and may be used in animal production as well for conservation of stored grains. Although the use of herbal remedies for the prevention and treatment of a variety of illnesses in animals has increased tremendously in recent years, there is still a lot to study to bring about its full potential advantages.

For the results to be effective it is essential to understand and master all interwoven aspects, which include the identification, cultivation, collection, processing, storage, route of administration, dosage and recommended use for different species of animals as well as toxicology and safety use. Another major challenge is to pass on this knowledge to the breeders.

Suggestions

Herbal medicines have a great potential to be a good answer to treat animals, especially organic herds. However, further research, support and encouragement are required for this methodology to be correctly and safely used. Efforts should be made so that this methodology could be developed and disseminated.

The possibility of implementing a medicinal orchard, a true "living pharmacy", on farms or communities is feasible and of great importance because it also reduces the need to buy inputs from external sources, even herbal products. Needless to say, each region should preferably use its biome species.

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