

"ژورنال منتخب الزویر در حیطه مهندسی علوم دامپزشکی"

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1. Most Downloaded

Use of plants in novel approaches for control of gastrointestinal helminths in livestock with emphasis on small ruminants

Abstract

Helminth infections are a major cause for reduced productivity in livestock, particularly those owned by the poor worldwide. Phytomedicine has been used for eons by farmers and traditional healers to treat parasitism and improve performance of livestock, and many modern commercial medicines are derived from plants. However, scientific evidence on the anti-parasitic efficacy of most plant products is limited, regardless of their wide ethnoveterinary usage. Scientific validation of the anti-parasitic effects and possible side-effects of plant products in ruminants is necessary prior to their adoption as a novel method for parasite control.

A variety of methods has been explored to validate the anthelmintic properties of such plant remedies, both in vivo and in vitro. In vitro assays are useful as pre-screens of activity and are mainly performed with the free-living rather than parasitic stages of nematodes. Concentrations of potentially active substances used in vitro do not always correspond to in vivo bioavailability. Therefore, in vitro assays should always be accompanied by in vivo studies when used to validate the anthelmintic properties of plant remedies.

In vivo controlled studies have shown that plant remedies have in most instances resulted in reductions in the level of parasitism much lower than those observed with anthelmintic drugs. Whether it is necessary or not to achieve very high efficacy in order for plant remedies to have a role in the control of parasitism depends on the determination of biologically important levels of reduction of parasitism and it will be required prior to the wide-scale use of plant products for parasite control. Similarly, standardisation of validation studies in reference to the numbers of animals required for in vivo studies to measure direct anthelmintic effects of a plant needs to be established.

Although in many cases the active compounds in the herbal remedies have not been fully identified, plant enzymes, such as cysteine proteinases, or secondary metabolites, such as alkaloids, glycosides and tannins have shown dose-dependent anti-parasitic properties. However, as some of the active compounds may also have anti-nutritional effects, such as reduced food intake and performance, it is essential to validate the anti-parasitic effects of plant products in relation to their potential anti-nutritional and other side effects. A concerted effort on isolation, development, and validation of the effects of these herbal remedies will have to be undertaken before their wider acceptance.

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2. Recent Article

Exposure to vector-borne pathogens in privately owned dogs living in different socioeconomic settings in Brazil

Abstract

This survey was conducted in four Brazilian cities, from three federative units (Pernambuco, Minas Gerais, and Federal District), representing different socioeconomic settings, to determine the presence of antibodies to or antigens and DNA of selected pathogens in privately owned dogs. From January to April 2015, blood and serum samples were collected and assayed using different tests. In particular, antibodies to *Anaplasma* spp., *Borrelia burgdorferi sensu lato*, and *Ehrlichia* spp., and antigens of *Dirofilaria immitis* were detected using a rapid enzyme-linked immunosorbent assay, whereas antibodies to *Babesia* spp. were detected by an immunofluorescence antibody assay. Moreover, the presence of *Leishmania* DNA in blood samples was assessed by real-time polymerase chain reaction. Overall, 208 (69.3%) out of 300 dogs were positive for at least one tested pathogen (intended here as antibodies, antigen or DNA, as abovementioned), with 139 (66.8%) of them being positive to two or more pathogens. No dog presented antibodies to *B. burgdorferi* s.l., and *D. immitis* antigens were detected exclusively in dogs from Pernambuco. Among positive dogs, the most common clinical signs were lymphadenomegaly (45.2%), onychogryphosis (41.3%), dermatitis (34.1%), pale mucous membranes (19.7%), weight loss (14.9%), fever (12.5%), alopecia (11.1%), and lethargy (4.8%). Tick and flea infestations were recorded in 41.7% and 29.3% of the dogs, respectively, with 49 (16.3%) dogs being co-infested by both ticks and

fleas. Most of the tick- and flea-infested dogs presented high level of infestation (>10 ticks and >20 fleas). The level of tick infestation varied significantly among federative units, being highest in Minas Gerais (68.0%), followed by Pernambuco (36.0%) and Federal District (21.0%). On the other hand, the level of flea infestation was higher in Pernambuco (50.0%), followed by Minas Gerais (29.0%) and Federal District (9.0%). The number of dog owners reporting the use of ectoparasiticides (on dogs and/or in the environment) varied significantly, ranging from 6.0% in Pernambuco to 60.0% in Federal District. This study reveals disparate results in terms of dog exposure to fleas and ticks in the studied communities, which may be related to factors such as the owners' capability/willingness to afford the use of ectoparasiticides on their dogs and the dog's level of restriction. Further research is needed to establish the relationship between dog owners' socioeconomic situation and the level of exposure to ectoparasites and their transmitted pathogens.

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3. Most Cited

An inconvenient truth: Global worming and anthelmintic resistance

Abstract

Over the past 10-15 years, we have witnessed a rapid increase in both the prevalence and magnitude of anthelmintic resistance, and this increase appears to be a worldwide phenomenon. Reports of anthelmintic resistance to multiple drugs in individual parasite species, and in multiple parasite species across virtually all livestock hosts, are increasingly common. In addition, since the introduction of ivermectin in 1981, no novel anthelmintic classes were developed and introduced for use in livestock until recently with the launch of monepantel in New Zealand. Thus, livestock producers are often left with few options for effective treatment against many important parasite species. While new anthelmintic classes with novel mechanisms of action could potentially solve this problem, new drugs are extremely expensive to develop, and can be expected to be more expensive than older drugs. Thus, it seems clear that the "Global Worming" approach that has taken hold over the past 40-50 years must change, and livestock producers must develop a new vision for parasite control and sustainability of production. Furthermore, parasitologists must improve methods for study design and data analysis that are used for diagnosing anthelmintic resistance, especially for the fecal egg count reduction test (FECRT). Currently, standards for diagnosis of anthelmintic resistance using FECRT exist only for sheep. Lack of standards in horses and cattle and arbitrarily defined cutoffs for defining resistance, combined with inadequate analysis of the data, mean that errors in assigning resistance status are common. Similarly, the lack of standards makes it difficult to compare data among different studies. This problem needs to be addressed, because as new drugs are introduced now and in the future, the lack of alternative treatments will make early and accurate diagnosis of anthelmintic resistance increasingly important.

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4. Open Access Article

مقاله ی زیر بصورت کامل قابل دریافت و در صورت تمایل قابل ترجمه می باشد

The prevalence and development of digenean parasites within their intermediate snail host, *Galba truncatula*, in a geographic area where the presence of *Calicophoron daubneyi* has recently been confirmed

Abstract

During the past decade, rumen fluke (*Calicophoron daubneyi*) has established as a prominent parasite of livestock within numerous European countries. Its development and spread is enabled by the presence of its intermediate snail host *G. truncatula*. However, the dynamics of this stage of the *C. daubneyi* lifecycle is yet to be recorded in numerous northern European countries including the UK. Here, the prevalence of *C. daubneyi* along with *F. hepatica*, *H. cylindracea* and other parasites infecting *G. truncatula* snails on 10 Welsh farms was recorded using morphological and PCR techniques.

A total of 892 *G. truncatula* snails were collected between May and October 2016. The prevalence of *C. daubneyi* in sampled *G. truncatula* snails (4%) was lower compared to *F. hepatica* (5.6%). No association in prevalence between these species was recorded. *Haplometra cylindracea* was found infecting 8.2% of *G. truncatula* snails, with its prevalence within *G. truncatula* populations negatively associated with *F. hepaticacercariae* prevalence ($P = 0.004$). Generalized estimation equation (GEE) linear regression models identified the levels of respective fluke eggs shed onto pasture as the main significant association between prevalence levels of both *C. daubneyi* and *F. hepatica* within *G. truncatula* populations ($P < 0.001$). However, equivalent prevalence levels of *C. daubneyi* and *F. hepatica* within *G. truncatula* populations were associated with higher *C. daubneyi* egg outputs and lower *F. hepatica* egg outputs from livestock grazing the *G. truncatula* habitats. Only one of 36 *C. daubneyi* infected *G. truncatula* snails was found harbouring its cercarial stages, a significantly lower proportion compared to the 29 of 50 *F. hepatica* infected *G. truncatula* harbouring its respective cercariae ($P < 0.05$).

These results signify that *C. daubneyi* may be less adept at infecting and developing in the UK's native *G. truncatula* populations in comparison with *F. hepatica*. However, *C. daubneyi* has previously demonstrated its ability to progressively adapt to an intermediate host in a new environment. If *C. daubneyi* were to adapt to infect and develop more efficiently in UK *G. truncatula* populations, paramphistomosis risk would significantly increase leading to increased livestock losses. Questions are also raised regarding potential interaction between digenean species at intermediate snail host level, which could impact subsequent livestock trematodosis risk.

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