



BEYOND PREVENTION: DEWORMING AS A PILLAR IN DERMATOLOGICAL PRACTICE

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INTRODUCTION

Parasite control has been an essential component of preventive veterinary medicine for decades. Traditionally, deworming has been conceived as a basic prophylactic strategy aimed at controlling internal and external parasites with the dual objective of preserving the animal's general health and reducing the zoonotic risk to humans. However, this approach falls short in the field of veterinary dermatology, as deworming is not only a preventive measure, but also a true diagnostic and therapeutic pillar in many skin diseases, both parasitic and non-parasitic.

Ectoparasites (especially fleas and mites), in addition to being direct aetiological agents of dermatosis, play a decisive role as triggers, aggravators or false perpetrators of immune-based diseases, such as atopic dermatitis. Their ability to exacerbate pruritus, complicate chronic inflammatory processes and interfere with differential diagnoses means that deworming must now be considered a central part of dermatological practice.

Therefore, adequate antiparasitic control is essential in the treatment of dermatoses caused by mites (scabies) or insects (pulicosis, pediculosis, etc.) and in the diagnostic approach to allergic dermatoses, especially atopic dermatitis and flea bite dermatitis.

The objectives of this conference are:

- To address the role of parasites and deworming in clinical practice, beyond simple prophylaxis, highlighting their relevance in the field of dermatology and without forgetting their importance within the "One Health" concept.
- To present the evolution of antiparasitic molecules over time, from the emergence of phenylpyrazoles and neonicotinoids to the current era of isoxazolines, highlighting some current concepts regarding the use of antiparasitic products, such as the latest discoveries in terms of resistance and their impact on the environment.
- Present different clinical situations that reflect the importance of adequate antiparasitic control in the diagnosis and treatment of dermatological patients.

THE ROLE OF PARASITES IN DERMATOLOGY

Parasites, both external and internal, can be involved in various dermatological conditions, usually pruritic, either primarily or secondarily, acting as:

- Etiological agents of dermatoses such as infestations by fleas (pulicosis), chewing lice (pediculosis), and scabies mites (sarcoptic, notoedric, otodectic, etc.), producing skin lesions due to their presence or their bite/sting, many of them with very characteristic symptoms (alopecia, intense pruritus, scabs, erythematous or pustular lesions). Confirmation of the parasitic agent and the implementation of effective antiparasitic control are crucial for resolving the condition.
- Triggers of hypersensitivity, such as DAPP or hypersensitivity to intestinal parasites. In clinical practice, DAPP is one of the most common allergic diseases in dogs and cats, characterised by intense pruritus and secondary lesions that can be confused with atopic dermatitis. In fact, in many patients, both processes coexist, complicating differential diagnosis and therapeutic management.



- Aggravating and perpetuating factors of some dermatitis. Parasites, even in subclinical loads, act as modulators of the immune response and the pruritus threshold. Thus, an atopic animal or one with immune-mediated dermatitis may experience notable exacerbations of its symptoms in the presence of minimal parasitic infestations. This ability to act as inflammatory "background noise" makes ectoparasites false perpetuators of many chronic dermatoses.
- They are vectors of diseases such as rickettsiosis, bartonellosis, mycoplasmosis, and dipylidiasis, among others, which they can transmit to infested animals, other animals of the same species, and humans living with them (zoonoses).

DEWORMING AS A DIAGNOSTIC TOOL

A fundamental aspect of dermatology is that deworming must be integrated into the diagnostic protocol. The exclusion of parasites as a primary cause or contributing factor is mandatory before labelling a case as allergic, immune-mediated, or idiopathic.

Therapeutic trials with antiparasitic drugs are often a valuable diagnostic test. In patients with pruritus without specific lesions, or when laboratory tests to reveal the presence of parasites (combing/brushing, heat test, trichography, skin scrapings, coprological analysis) are negative but the suspicion of ectoparasitosis persists, systematic antiparasitic treatment allows the presence of mites that cause scabies or fleas to be practically ruled out. Ignoring this step can lead to diagnostic errors, delays in resolving the condition, and unnecessary treatments with immunosuppressive drugs or antibiotics in a desperate attempt to resolve the clinical symptoms.

Deworming protocols in dermatology

An optimal deworming protocol must be designed on an individual basis, taking into account the animal's lifestyle (urban, rural, with access to the outdoors, hunter, living with other animals); environmental conditions (climate, presence of vectors, endemic areas); species, breed and age of the patient; zoonotic risk to the family and community; health status and possible comorbidities, etc. In addition, it is essential to follow the technical data sheets for each product, avoid overdosing and select molecules with an appropriate safety profile. It is also essential to educate the guardian to ensure the correct application and continuity of treatment.

Expert organisations such as ESCCAP (*European Scientific Counsel Companion Animal Parasites*) have designed deworming protocols based on the factors mentioned above. Furthermore, current recommendations indicate that deworming should be maintained throughout the year, in a context of global climate change and geographical expansion of many disease-transmitting vectors.

One Health approach and professional responsibility

In clinical practice, veterinarians have a responsibility to adapt these guidelines to the clinical reality of each patient and to educate owners about the importance of compliance with antiparasitic treatments.

Deworming should not be viewed in isolation, but as part of an overall health strategy. Controlling parasites in companion animals reduces the risk of zoonotic disease transmission (e.g. *Dipylidium caninum*, *Sarcoptes scabiei*, *Leishmania spp.* transmitted by sand flies) and contributes to public health.

In this regard, veterinarians have a dual responsibility: to improve the patient's quality of life and to protect the health of the community. Educating guardians on the importance of regularity, correct application and the choice of appropriate products is key to achieving these objectives.

EVOLUTION OF ANTIPARASITIC MOLECULES AND CURRENT CONCEPTS



Throughout history, many molecules with insecticidal and acaricidal activity have been developed, some of which have already been withdrawn due to their toxicity. Each chemical family brought advances, but also limitations in terms of safety or spectrum of action.

Since 2014, the emergence of isoxazolines has marked a turning point in antiparasitic therapy. These molecules act by blocking GABA-regulated chloride channels in arthropods, achieving nearly 99% efficacy in just 24 hours. Their duration of action varies between 4 and 12 weeks in oral formulations (sarolaner, fluralaner, lotilaner, afoxolaner), and up to 12 months in the case of the subcutaneous injectable formulation of fluralaner.

Rapid action is one of the most desirable characteristics, useful in controlling insect populations and relevant in controlling vector-borne diseases, where pathogen transmission depends on the vector remaining on the host.

Within the framework of the 2030 agenda and the sustainable development goals, recent research is focusing on the detection of residual products of antiparasitic molecules in the environment and the impact this may have on different ecosystems and therefore on human and animal health ("One Health").

Another aspect currently under study is the emergence of insecticide resistance and its transmission among parasites. The prolonged and indiscriminate use of antiparasitic agents poses a risk for the development of resistance by parasites. Therefore, it is recommended to rotate active ingredients to broaden the spectrum and delay the emergence of resistance. The different antiparasitic products on the market are characterised by their different degrees of action: insecticide, acaricide or both. Some of them are only repellents, adulticides or larvicides, so it is important to understand their action and combine them according to the patient's needs. As there is no perfect product with a broad spectrum for all arthropods, the choice and combination of antiparasitic molecules with different mechanisms of action is essential.

The future of deworming in dermatology is moving towards long-lasting, easy-to-apply formulations that promote compliance, combinations that integrate protection against multiple parasites and vector-borne pathogens, selective deworming strategies, and the development of antiparasitic agents with less environmental impact.

CLINICAL CASES

Several clinical cases will be presented that reflect the impact of parasites in dermatological practice and the importance of adequate antiparasitic control during the diagnostic approach to pruritic dermatoses in order to control clinical symptoms.

CONCLUSIONS

Deworming, traditionally considered a prophylactic measure, should now be recognised as a diagnostic and therapeutic pillar in veterinary dermatology. Its role extends from the prevention of infestations to the resolution of complex clinical pictures, the improvement of differential diagnoses and the modulation of chronic diseases.

Its integration into clinical protocols ensures better control of parasitic dermatoses, reduces the risk of diagnostic errors, and avoids unnecessary or inappropriate treatments. Furthermore, it represents an essential component of the "One Health" approach, contributing to the control of zoonoses and community safety.

In short, deworming transcends the realm of prophylaxis to become an essential therapeutic ally in veterinary dermatology, with tangible benefits for animal health, public health, and responsible clinical practice.



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