sciendo

DOI: 10.2478/fv-2023-0035

FOLIA VETERINARIA, 67, 4: 34—40, 2023

DERMATOLOGICAL DISEASES IN DOGS – A SURVEY IN VETERINARY FACILITIES

Zuzana Malinovská, Laura Fekeová
Department of Pharmacology and Toxicology, University of Veterinary Medicine and Pharmacy in Košice, Komenského 73, 041 81 Košice
Slovakia

zuzana.malinovska@uvlf.sk

ABSTRACT

Skin diseases in dogs are very often the reason for visiting the veterinarian. For the successful management of a dermatological disease, accurate diagnosis, correct setting of the treatment and cooperation of the owner are necessary. This article provides a summary of information related to the diagnosis and treatment of skin diseases in dogs obtained from 50 veterinary facilities in Slovakia. In the monitored veterinary facilities, the most common dermatoses are skin diseases due to immune disorders, followed by bacterial and parasitic skin diseases. For the prevention of external parasites (ticks, fleas), tablets containing fluralaner, sarolaner and afoxolaner are increasingly preferred, even though spot-on preparations, especially those containing fipronil, maintain a constant position in prevention. Among the most commonly used ATBs in the treatment of skin bacterial infections are amoxicillin with clavulanic acid and cephalexin. Currently, the veterinary medicine with the active substance oclacitinib and the medicine containing lokivetmab are coming to the fore in the treatment of allergies in dogs, while veterinarians are trying to limit the use of glucocorticoids.

Key words: dermatologic disease; diagnostics; dog; therapy

INTRODUCTION

The skin is the largest organ system and is often considered an indicator of an animal's health. Skin diseases are not only a health and aesthetic problem, but can significantly worsen the quality of life of the dog and the owner. The basis of successful therapy of dermatological diseases is the correct determination of the diagnosis. Skin diseases are divided into parasitic, bacterial, fungal, viral, immune, hormonal and genetically determined. The most common symptoms of dermatological diseases include pruritus, redness, scaling of the skin and alopecia [13, 16]. The clinical symptoms of many skin diseases are similar to each other, and the diagnosis is often complicated. It depends on the practical skills and experience of the veterinarian, but also on the equipment of the veterinary clinic and the possibilities of diagnostic methods [9, 10, 14]. Therapy of skin diseases in dogs can be influenced by various factors, such as age and breed of the dog, type of disease, other systemic or skin disease, wrong diagnosis or wrong therapy, non-cooperation of the owner, etc. In many cases, the treatment is not only time-consuming, but also financially demanding and can last „a dog's whole life" [17].

The aim of this survey was to obtain and present relevant information about skin diseases in dogs, their diagnosis and treatment from veterinary facilities (ambulances, clinics, hospitals) in Slovakia by means of an anonymous questionnaire.

MATERIALS AND METHODS

For the purpose of this study, an anonymous questionnaire intended for obtaining relevant information about skin diseases in dogs was prepared for veterinarians working in veterinary ambulances, clinics and hospitals in Slovakia. The questionnaire consisted of 25 questions (mostly rating and multiple-choice questions). The questions related to the origin of skin diseases, the most common pathogens causing these diseases, the use of medicinal preparations with specific active ingredients, and therapeutic procedures used by veterinarians in the interviewed veterinary facilities.

The questionnaire was sent to 50 veterinary facilities in Slovakia: 29 ambulances; 18 veterinary clinics; and 3 veterinary hospitals. All addressed facilities responded. There responses are summarised in the text and in Tables 1–3 and Figure 1.

RESULTS

Skin diseases

The results of the survey showed that skin diseases represent on average, up to a third of all diseases, with which owners presented their dogs in the respective facilities. Seventeen facilities indicated that the occurrence of skin diseases ranging from 11 to 20 % and 19 facilities in the range of 21–30 %. Eight veterinarians reported dermatological treatment in 31–40 % of all treated cases, and another two up, to over 40 %.

It is interesting that up to 18 veterinarians from the 50 veterinary facilities identified immune skin diseases (allergies, atopy, etc.) as the most common dermatoses. In thirteen facilities bacterial diseases were the most frequent. Parasitic skin diseases rated as third (10 facilities). Viral diseases, skin diseases due to hormonal disorders and skin mycoses were less common.

1. Parasitic skin diseases

Table 1 shows the occurrence of the causative agents of parasitic skin diseases in dogs. Veterinarians had to determine which of the parasitic skin diseases they treat most often in dogs. *Ixodes* spp. and other species of ticks were identified by up to 26 veterinarians as the most common cause of parasitic skin diseases. *Ctenocephalides* spp. is considered the most frequent causative agent by 17 veterinarians. As many as 21 veterinarians identified demodicosis as the third most common parasitosis, but 12 veterinarians rated it as the second most common skin parasitosis (Table 1).

Table 1. Prevalence of causative agents of parasitic skin infections

Type of parasite	1	2	3	4	5
Ctenocephalides spp.	17	13	10	6	4
Ixodes spp. and other species of ticks	26	11	4	4	5
Cheiletiella spp.	5	5	7	15	18
Demodex spp.	1	12	21	12	3
Sarcoptes spp.	4	9	10	16	11

Representatives of parasitic diseases were rated by participants on a rating scale from 1 to 5 (1 – occurs most often; 5 – occurs the least).

Veterinarians from 34 veterinary facilities recommend oral tablets the most from among antiparasitics, namely Bravecto (84 %) with the active substance fluralaner, Simparica tablets (82 %) with the active substance sarolaner and NexGard (64 %) with the active substance afoxolaner. Comfortis tablets are less used (10 %). A high percentage of use is also achieved by spot-on preparations designed for external parasites or combined, suitable for internal parasites at the same time. Spot-on preparations, with the active substance fipronil have long held the lead in the group of spot-on preparations against fleas and ticks, all types of Frontline, Fyprist and Effipro are most often used.

In the group of spot-ons against external and internal parasites, the most widely used is Advocate with the active substance imidacloprid in combination with moxidectin, which is used in 80 % veterinary facilities. The second most used spot-on preparation is Stronghold (selamectin), or Stronghold plus (selamectin, sarolaner), which are used in 36 veterinary facilities (72 %). The third most used preparation, is Vectra 3D (dinotefuran, pyriproxyfen, permethrin), which was confirmed by 31 veterinary facilities (62 %).

Anti-parasitic collars finished in 3rd place in anti-parasitic protection. Among them, the most frequently used collar is Foresto, with the active substances imidacloprid and flumethrin. Up to 88 % of veterinarians confirmed that the use of antiparasitic tablets is gaining more and more favor among dog owners. According to 86 % of veterinarians, dog owners seek advice when choosing a suitable antiparasitic. In 36 % of cases, dog owners listen to advice, but choose a cheaper preparation.

Medicinal products used for the treatment of whole-body demodicosis in dogs were investigated. The selection of medicinal preparations is shown in Table 2.

Table 2. Medicinal preparations used to treat whole-body demodicosis in dogs

Medicinal preparation	Use for the treatment (%)
Bravecto tablets	88
Advocate spot on	30
Supportive treatment	23
Neostomosan – bath	18
Ivermectin – injection	16
Amitraz – bath	12
Preventic collar	2
Scalibor collar	2

For the therapy of whole-body demodicosis, veterinarians use Bravecto tablets most often (88 %). The bath in Neostomosan, is still used by up to 18 % of veterinarians and Ivermectin in the form of an injection by up to 16 % of veterinarians. According to veterinarians (23 %), supportive treatment in the form of vitamin E, zinc, biotin, and unsaturated fatty acids, is also important for demodicosis. Veterinarians had the opportunity to add other medicinal preparations that they use in the therapy of whole-body demodicosis. They were as follows: NexGard spectra (4 %), Simparica (6 %), and Selehold (2 %).

2. Bacterial skin diseases

Secondary bacterial infections and superficial bacterial skin infections are the most frequently occurring bacterial skin infections in the questioned veterinary facilities. In second place, are hot spots, and bacterial skin infections caused by injury, biting and licking. Interdigital bacterial infections ranked third, and deep bacterial skin infections ranked fourth. Antibacterial agents play a key role in the treatment of bacterial infections.

It was determined how often veterinarians use the option of determining the sensitivity of isolated bacteria to antibiotics (ATB). Thirtysix veterinarians (72 %), use culture methods (creation of antibioticogram) only in case of recurrent infections, and 21 veterinarians (42 %) use these methods only in very severe cases of infection. Four veterinarians (8 %) choose other ATBs, in case of ineffective treatment, with the first antibiotic, and 17 veterinarians (34 %) use ATBs that they believe should be effective for the given infections.

Forty veterinarians (80 %) included aminopenicillins (ampicillin and amoxicillin), and 74 % veterinarians cephalosporins among the most frequently used ATBs in the treatment of skin infections. Cephalosporins belong to bactericidal ATBs, unlike penicillins, they are more effective against gram-negative aerobically growing bacteria [13, 15]. For the therapy of bacterial skin infections, fluoroquinolones are used in 19 veterinary facilities.

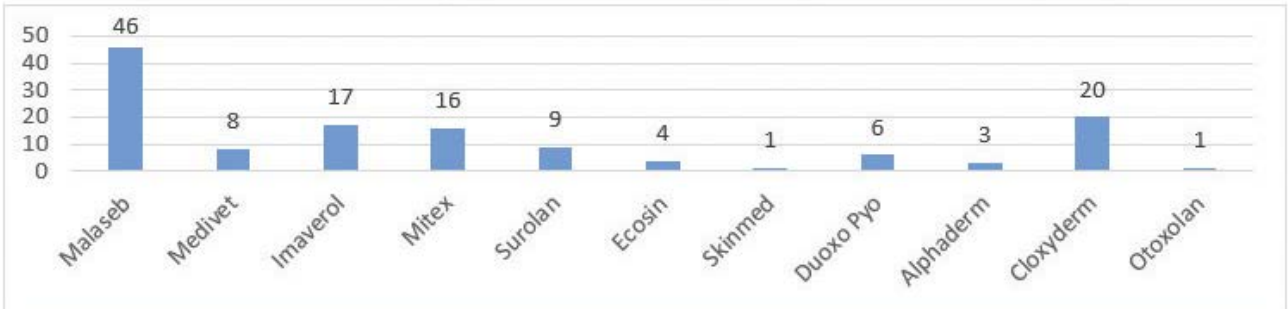
The most common ATBs used for the treatment of bacterial skin infections in the monitored clinics include: amoxicillin with clavulanic acid (31 %), cephalexin (28 %), enrofloxacin (11 %), cefovecin (8 %), doxycycline (6 %) and marbofloxacin (3 %). Up to 8 % of veterinarians use topical ATB (neomycin, bacitracin, polymyxin B and fusidic acid) in the treatment of skin infections.

3. Mycotic diseases of skin

Yeast infections of the skin caused by the genera *Malassezia* and *Candida* account for up to 90 % of skin mycoses, treated in veterinary facilities in Slovakia. Dermatophytoses caused by pathogens *Microsporum canis,* and *Trichophyton* spp. occur less frequently (10 %). For the most common procedures in the treatment of skin mycoses were indicated in the questionnaire. In treatment of fungal diseases, the local form of therapy is used the most (74 %). There are cases when general therapy in the form of tablets (10 %) is also used, but such form of therapy is not used in 16 % of facilities.

In general, azole antifungals, which are divided into imidazoles, and triazoles, are used for the therapy of skin mycoses. Imidazoles include clotrimazole, miconazole, enilconazole, and ketoconazole. Triazoles include itraconazole and fluconazole. The mechanism of action of azole antifungals consists in the inhibition of the enzyme lanosterol-demethylase, which prevents the synthesis of ergosterol, which is an important part of the plasma membrane [15]. Some disinfectants and antiseptics with the active substance chlorhexidine are also used for the treatment of skin mycoses (Fig. 1).

Malaseb shampoo is one of the most widely used preparations in the treatment of skin mycoses, probably due to the content of up to two active substances (miconazole and chlorhexidine). It is used by up to 46 facilities out of 50 (96 %). Popular preparations include Clorexyderm, which is prescribed by veterinarians in 20 facilities (40 %) and Imaverol in 17 of them (34 %). Mitex ear drops are



x axis – veterinary preparations used; y axis – number of participating veterinary facilities

Fig. 1. Overview of medicinal products used for the treatment of skin mycoses and otitis in interviewed veterinary facilities

applied by veterinarians in 16 facilities (32 %). Thirty-five vets (70 %) agree that yeast infections are most common in allergic dogs. About one-third of veterinarians predict that yeast infections will return more than 50 % of the time.

From the results of the questionnaire, it follows that in allergic dogs with skin manifestations, an allergy to food was detected in 56 %, and to mites and yeasts in 46 %. Flea bite allergy with skin manifestation is less frequent (8 %). From practical experience, the most common allergen is chicken meat (78 %), followed by beef (42 %), and cereals (40 %). Less common are allergies to pork (16 %) and lamb (10 %). Turkey, duck, fish and eggs accounted for 6 % and rice for 4 %.

The use of allergy immunotherapy in the form of a specially prepared mixture of allergens (injections or drops) according to the results of the tested panel of allergens of a particular dog is shown in Table 3. The immunotherapy in this form is still not a standard in the treatment of allergies, mainly because of the financial burden for dog owners.

Table 3. Use of immunotherapy in dogs with skin manifestations of allergy

22 % of veterinarians do not use immunotherapy because they do not offer such an option
26 % of veterinarians offer immunotherapy, but the owners refuse it for financial reasons
34 % of veterinarians offer immunotherapy, they use it 3 times a year
12 % of veterinarians offer immunotherapy, they use it 3–6 times a year
4 % of veterinarians use immunotherapy more than 6 times a year
1 veterinarian (2 %) had not heard of this form of therapy

The survey determined the frequency of administration of glucocorticoids in allergies with skin manifestations in dogs. Three veterinarians (6 %) use glucocorticoids in allergy therapy almost always, 14 % of veterinarians less often, and 58 % of veterinarians only in necessary cases. Veterinarians try to choose another alternative of therapy in 22 %. Most veterinarians confirmed the use of human preparations when applying glucocorticoids.

Currently, the veterinary drug Apoquel with the active substance oclacitinib, which acts on pro-inflammatory cytokines or others, that play a role in the allergic reaction – pruritus, is coming to the fore in the treatment of allergies in dogs. It is prescribed by veterinarians in up to 32 veterinary facilities (64 %). In the treatment of allergies, the drug Cytopoint (lokivetmab) is also used to treat pruritus associated with allergic dermatitis. It is administered in the form of a subcutaneous injection. It is a caninized monoclonal antibody expressed using recombinant methods in a Chinese hamster ovary cell line. Fifteen veterinarians also use human medicinal preparations in the treatment of allergies. They are as follows: Zodac and Zyrtec (cetirizine) – 10 veterinarians, Dithiaden (bisulepin) – 8 veterinarians, Equoral (cyclosporine) – 2 veterinarians, and Atarax (hydroxyzine) – 1 veterinarian.

The questionnaire included a question regarding the use of individually prepared drugs for the treatment of skin diseases in dogs. Up to 47 out of 50 interviewed Slovak veterinary facilities do not use the induvidually prepared drugs at all. Two veterinarians do not use this option because they do not have a pharmacy available to prepare these drugs. Only 3 veterinarians prescribe them, of which Mikulič ointment, chloramphenicol ointment with or without glucocorticoid, and cyclosporine eye drops were listed.

4. Dermatoses associated with hormonal disorders

Cushing's syndrome was chosen as the most common hormonal disorder by 24 veterinarians (48 %), while 21 veterinarians (42 %) chose hypothyroidism as the most common disorder of this type. According to as many as 39 veterinarians (78 %) hyperestrogenism rated as third. No veterinarian recommended euthanizing a dog diagnosed with Cushing's syndrome. Dog owners who have a dog with Cushing's syndrome most often choose pharmacotherapy (96 %), but they do not always want to continue

long-term treatment, due to high costs. Only one owner chose euthanasia.

DISCUSSION

In our analysis of 50 veterinary facilities, we found that skin diseases represent up to a third of all dog diseases treated by veterinarians noting that immune skin diseases are on the rise. Within the interviewed facilities, up to 36 % of all veterinarians put in the first place skin diseases caused by immune disorders. In a study in Cameroon, K o u a m o et al. (2021) considered parasitic diseases to be the most common diseases in dogs (31 %) [11], while in Slovakia only 20 % of veterinarians chose parasitic skin diseases as the most common. The analysis of our results in terms of skin parasites, showed that representation of fleas and ticks was the largest. In a study that dealt with the identification of ectoparasites, specifically ticks and fleas in 161 dogs, the genus *Rhipicephalus* was represented the most as it was found in 108 dogs. Of the fleas, the predominant species was *Ctenocephalides felis*, which was identified in 62 dogs [7]. In our study, we did not focus on genus and species identification of representatives of ticks and fleas. Slovak veterinarians recommended mostly the oral tablets (Bravecto, Simparica, NexGard) as a prevention against ectoparasites. They were registered a few years ago as a novelty among the antiparasitic drugs. Various studies confirmed high effectiveness of oral anti-ectoparasitic drugs. The percentage of their efficacy against ticks ranged from 85.2 % to 99.6 % at 24 hours after infestation for NexGard tablets, and from 63.4 % to 99.1 % for Bravecto [2]. Efficacy against *Ctenocephalides* spp. after 24 hours reached 100 % for both products (NexGard and Bravecto) [3]. Spot on and collars keep their place in the prevention against ticks and fleas. The choice of an antiparasitic as part of prevention depends on the dog owner. In most cases, the owners seek advice from a veterinarian, who will evaluate the patient's health and the dog's breed type and recommend the most suitable antiparasitic. For dogs kept in an apartment, e.g. with small children, spot on products and antiparasitic collars are not suitable, and therefore pills that have a monthly or three-month effect should be preferred.

B o n t e m s et al. (2020) claimed that dermatophytes are the most common pathogens of skin mycoses not only in humans but also in animals [4]. Our results showed that yeast skin diseases (*Malassezia, Candida*) are the most common skin mycoses. This statement was confirmed by 90 % veterinarians interviewed in our study, and dermatophytoses (*Microsporum canis, Trichophyton* spp.) accounted for only 10 % of treated animals. From the analysis of our results, local therapy in the form of baths, solutions, emulsions or ointments is the most used in the treatment of skin yeast infections. Preparations containing chlorhexidine and those containing miconazole are most often used for the treatment of dermatomycoses.

The response to one question in our questionnaires showed that to 47 out of 50 interviewed Slovak veterinary facilities do not use the individually prepared drugs for the treatment of skin diseases in dogs. For the sake of interest and comparison, we analysed the prescriptions of individually prepared drugs in pharmacies in the Czech Republic. According to this, veterinarians in the Czech Republic compared to Slovak veterinarians more often use the possibility of prescribing individually prepared drugs. They prescribed the following preparations: Prednisone syrup, Emulsion polysan cum oleum helianthi, Dimethylsulphoxide solution, Mikulič ointment, Solutio Galli-Valerio, RSB solution (resorcinol, salicylic acid, boric acid) in a ratio of 1:2:3, alcohol solution of iodine and shampoo with sulfur.

Within this study, we paid special attention to skin diseases that arise as a result of immune disorders. Atopic dermatitis or food allergy is becoming more and more common in dogs. This fact was claimed by 18 veterinary facilities out of 50. Food allergy (56 %) and allergy to mites and yeast (46 %) were most often confirmed in allergic dogs with skin manifestations. In a study that was aimed at detecting common allergens in dogs with atopic dermatitis using a serological immunoglobulin E-specific allergen test the authors found that the dogs were allergic to the following allergens: 38.3 % corn, 28.7 % potatoes, 22.7 % duck, 24.4 % cod, 95.6 % *Aspergillus fumigatus*, 31.9 % fleas. The percentage of detected allergens in dogs (54.8 %) was higher than in bitches (45.2 %) [1]. Our results showed that dogs in Slovakia were most allergic to meat (chicken 78 %, beef 42 %) and cereals (e.g. corn, rice; 40 %). Glucocorticoids are also used in the therapy of allergic manifestations of the skin. They have a fast onset, and show a strong antiphlogistic effect. However, long-term administration of glucocorticoids is not desirable, because they not only have a number of undesirable effects, but also have a negative effect on the hor-

monal balance. In the interviewed facilities, the most used glucocorticoids were those with the active ingredients prednisone and dexamethasone. Monoclonal antibodies, such as lokivetmabum, which are gaining more and more favour, are more suitable for therapy [8], which was also confirmed by the interviewed veterinarians. The drug oclacitinib has a great future worldwide due to its high effectiveness in the therapy of atopic dermatitis [5, 6, 12]. Up to 64 % of veterinarians confirmed the use of oclacitinib in their practice.

CONCLUSIONS

The prevalence of skin diseases in dogs is constantly increasing, which is closely related to the increasing number of dogs kept in the same household with humans and the higher standard of dog breeding. Unlike other organ systems, the skin and its diseases are directly visible and symptoms such as alopecia, scales, pruritus or even the parasites themselves are unpleasant not only from an aesthetic point of view, but also from the fear of infection. The increase in dermatological diseases can also be related to factors such as climate changes, which cause an increased occurrence of ticks even in the winter season, to the increasing resistance of pathogens to active ingredients, increasing number of allergies in the dog population, but also to more accurate diagnostic options. Dermatology in veterinary medicine currently reaches a high level in diagnosis and therapy, but the final result of the treatment still depends on the appropriately chosen therapy and cooperation of the dog's owner.

CONFLICT OF INTEREST

The authors declare that they have no conflict of interest.

REFERENCES

1. **Adam, G. O., Park, Y. G., Cho, J. H., Choi, J., Oh, H. G., 2022:** Detecting common allergens in dogs with atopic dermatitis in South Korean provinces using a serological immunoglobulin E-specific allergen test. *Vet. World*., 15, 8, 1996−2003. DOI: 10.14202/vetworld.2022.1996-2003.
2. **Beugnet, F., Liebenberg, J., Halos, L., 2015:** Comparative efficacy of two oral treatments for dogs containing either afoxolaner or fluralaner against *Rhipicephalus sanguineus sensu lato* and *Dermacentor reticulatus. Vet. Parasit.,* 209, 1−2, 142−145. DOI: 10.1016/j.vetpar.2015.02.002.
3. **Beugnet, F., Liebenberg, J., Halos, L., 2015:** Comparative speed of efficacy against ctenocephalides felis of two oral treatments for dogs containing either afoxolaner or fluralaner *Vet. Parasit.,* 207, 3−4, 297−301. DOI: 10.1016/j.vetpar.2014.12.007.
4. **Bontems, O., Fratti, M., Salamin, K., Guenova, E., Monod, M., 2020:** Epidemiology of dermatophytoses in Switzerland according to a survey of dermatophytes isolated in Lausanne between 2001 and 2018. *J. Fungi*., 26, 6, 95. DOI: 10.3390/jof6020095.
5. **Bruet, V., Mosca, M., Briand, A., Bourdeau, P., Pin, D., Cochet-Faivre, N., Cadiergues, M. C., 2022:** Clinical guidelines for the use of antipruritic drugs in the control of the most frequent pruritic skin diseases in dogs. *Vet. Sci., 9*, 4, 149. DOI: 10.3390/vetsci9040149.
6. **De Caro Martins, G., da Costa-Val, A. P., Coura, F. M., Diamantino, G. M. L., Nogueira, M. M., de Oliveira Melo-Junior, O. A., Giunchetti, R. C., et al., 2022:** Immunomodulatory effect of long-term oclacitinib maleate therapy in dogs with atopic dermatitis. *Vet. Dermatol.,* 33, 2, 142–e40. DOI: 10.1111/vde.13037.
7. **Diakou, A., Sofroniou, D., Paoletti, B., Tamvakis, A., Kolencik, S., Dimzas, D., et al., 2022:** Ticks, fleas, and harboured pathogens from dogs and cats in Cyprus. *Pathogens*., 11, 12, 1403. DOI: 10.3390/pathogens11121403.
8. **Gober, M., Hillier, A., Vasquez-Hidalgo, M. A., Amodie, D., Mellencamp, M. A., 2022:** Use of cytopoint in the allergic dog. *Front. Vet. Sci.,* 9, 909776. DOI: 10.3389/fvets.2022.909776.
9. **Hensel, P., Santoro, D., Favrot, C., Hill, P., Griffin, C., 2015:** Canine atopic dermatitis: detailed guidelines for diagnosis and allergen identification. *BMC Vet. Res.,* 11, 1, 196. DOI: 10.1186/s12917-015-0515-5.
10. **Hillier, A., Lloyd, D. H., Weese, J. S., Blondeau, J. M., Boothe, D., Breitschwerdt, E., et al., 2014:** Guidelines for the diagnosis and antimicrobial therapy of canine superficial bacterial folliculitis (Antimicrobial Guidelines Working Group of the International Society for Companion Animal Infectious Diseases). *Vet. Dermatol.*, 25, 3, 163–e43. DOI: 10.1111/vde.12118.
11. **Kouamo, J., Kana, A. G. D., Dongmo, C. C. Z., 2021:** The study of prevalence and associated risk factors of diseases

and other clinical conditions diagnosed in dogs and cats in Douala city, Cameroon. *Rev. Vét. Cliniq.,* 56, 2, 47−61. DOI: 10.1016/j.anicom.2021.01.001.

12. **Marsella, R., Doerr, K., Gonzales, A., Rosenkrantz, W., Schissler, J., White, A., 2023:** Oclacitinib 10 years later: lessons learned and directions for the future. *J. Am. Vet. Med. Assoc.,* 261, S1, S36−S47. DOI: 10.2460/javma.22.12.0570.
13. **Miller, W. H., Griffin, C. E., Campbell, K. L., 2012:** *Muller and Kirk's Small Animal Dermatology*. 7th edn., Saunders, 948 pp.
14. **Moriello, K. A., Coyner, K., Paterson, S., Mignon, B., 2017:** Diagnosis and treatment of dermatophytosis in dogs and cats: Clinical consensus guidelines of the World Association for Veterinary Dermatology. *Vet. Dermatol.*, 28, 3, 266–e68. DOI: 10.1111/vde.12440.
15. **Plumb, D. C., 2018:** *Plumb's Veterinary Drug Handbook: Desk 9th*. Wiley-Blackwell, 1456 pp.
16. **Rhodes, K. H., Werner, A. H., 2018:** *Blackwell's Five-Minute Veterinary Consult Clinical Companion: Small Animal Dermatology*. 3rd edn., Wiley-Blackwell, 848 pp.
17. **Santoro, D., 2019:** Therapies in canine atopic dermatitis: An update. *Vet. Clin. North. Am. Small Anim. Pract.,* 49, 1, 9–26. DOI: 10.1016/j.cvsm.2018.08.002.

Received September 4, 2023
Accepted October 9, 2023