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# Therapeutic efficacy testing of two topical products used in dry demodicosis lesions in dogs from Mehedinți County

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## Abstract

*Canine demodicosis is a serious dermatitis, difficult to treat, often recurrent, and the biology and pathogenesis of the aetiological agent prevent the action of drugs on skin. The aim of the study was to evaluate the therapeutic efficacy in dry canine demodicosis of two products: Ointment Canider (containing formamidine) and Demosymcan - gel whose components are natural and fixed in fast absorbing gels. The results obtained were statistically interpreted from the clinical and parasitological healing point of view (erythema, alopecia, squamae, hyperseboree, microscopic examination of the cutaneous scraping) and were calculated: scores averages, medians, standard deviations, minimum and maximum values. The clinical signs remission and negative microscopic examination of skin scraping from lesions were reported at 9 and 15 weeks in group I treated with the product based on honey, propolis, apple vinegar and extracts plant and 12 and 16 weeks, respectively, in lot II, where the product was based on amitraz and neomycin. Exacerbation of clinical signs and presence of mite in microscopic slides were revealed in the control group, to which a gel containing no ingredient was applied.*

**Key words:** dry demodicosis, dogs, therapy, Mehedinți County

## Introduction

Cutaneous parasitosis, demodicosis is diagnosed in a number of domestic and wild animals: carnivores, rodents, ruminants, insectivores. It is produced by *Demodex* species, the only genus of the *Demodecidae* family. A short history of the drug used in canine demodicosis over a hundred years confirms the claim that canine demodicosis is a serious dermatitis, difficult to treat, often recurrent, and the biology and pathogenesis of the aetiological agent prevent the action of drugs on skin (1, 8, 10, 11).

Current information on canine demodicosis is focused on therapy. While most authors use the acaricides treatment by spot-on (moxidectin-imidacloprid), oral or systemic administration of avermectin and milbemycin or topical applications of formamidines, other authors recommend non-irritating and non-invasive skin and body products (2, 3, 5, 6, 7, 10, 11, 12).

Taking into account the high prevalence of canine demodicosis in our country and in the world, the complex therapeutic approaches and the specialists emphasized recommendation natural product, without irritating effects on demodectic skin, the aim of the study was to evaluate the therapeutic efficacy of two products: Ointment *Canider* (containing formamidine) and *Demosymcan - gel* whose components are natural and fixed in fast absorbing gels.

## Materials and methods

A total of 62 dogs, different breeds, males and females, aged 3–48 months, were selected for this study. The dogs had dry localized cutaneous lesions manifested by: erythema, alopecia, fine squamae, whitish, hyperseboree. The lesion distribution was: periocular, cheek, ears, lips, ventral cervical region, olecranic region, anterior forearm, dorsal lumbar region, trunk, posterior legs. The dogs belonged to the Veterinary Districts of Greci, Șimian, Tâmbna, Mehedinți County. The dogs were divided into three groups.

Lot I - 22 dogs to which the product Demosymcan Gel was applied for the treatment of dry lesions in canine demodicosis

Gel for the treatment of dry lesions in canine demodicosis - is an original product produced by the Parasitology Department team - VMF Timisoara, in collaboration with *The National Research and Development Institute for Textile and Leather*, Bucharest. The gel is OSIM registered as patent application no. A 00075/ 1.02.2016. The invention refers to a gel for the treatment of dry canine demodycosis lesions produced in dogs by mite *Demodex spp.* and it based on of the main components from honey, propolis, apple vinegar and hydro-glycero-alcoholic extracts from the buds of various plants.

The product was awarded at the National and International Salons of Inventions (Iasi, Cluj, Timisoara, Bucharest, Brussels, Geneva, Barcelona) where it won 7 gold medals and 8 special prizes (Fig.1).

**MINISTRY OF RESEARCH AND INNOVATION**  
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**FACULTATEA DE MEDICINA VETERINARA**

**GEL FOR TREATMENT OF DRY LESIONS IN CANINE DEMODICOSIS**  
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**Abstract:**  
The invention is a gel composed of natural ingredients and can be applied topically, on a daily basis to the dry lesions in canine demodicosis.

**Novelty:**  
The aim of this invention is to establish the components and the association ratios in such a way that the Jelly product should be effective in the remission of demodicosis lesions and without any irritating effects on the parasitized skin.

**Description:**  
According to the invention, the jelly contains: 26% honey, 20% propolis, 30% apple vinegar and 20% hydroglycoalcoholic extracts of black currant buds, walnut buds, bilisous buds, cedar offshoots and rye crowns.

**Advantages:**  
→ an easy way of applying a local treatment in the dry form of canine demodicosis  
→ quick skin absorption  
→ avoiding the side effects that are encountered in systemic administration  
→ properties such as: antibacterial, anti-inflammatory, antipruritic, locally trophic, antifungal and hyposeborrheic  
→ only natural principles with properties as follows: hyposeborrheic, hair growth stimulation, anti-allergenic, skin cleansing, anti-inflammatory, antifungal, antipruritic and immunostimulant  
→ no irritating effects on parasitized skin

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Fig. 1. Gel for dry lesions of canine demodicosis treatment

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Lot II - 20 dogs to which the Canider Ointment product was applied (contains amitraz and neomycin sulfate). Lot III, the control group - 20 dogs to which a gel with containing no ingredient.

The dogs were followed weekly for a period of 3 months. Monitoring began one week after the treatment onset and continued after clinical and parasitological healing.

The results obtained were statistically interpreted from the clinical and parasitological healing point of view (erythema, alopecia, squamae, hyperseboree, microscopic examination of the cutaneous scraping) and were calculated: scores averages, medians, standard deviations, minimum and maximum values.

### Results and discussions

By corroborating the results of the anamnesis, the clinical and dermatological examinations, the diagnosis of demodicosis was established (Figures 2, 3, 4, 5).



**Fig. 2.** Descuamation



**Fig. 3.** Alopecia



**Fig. 4.** Erythema



**Fig. 5.** Hyperseboree

The demodicosis diagnosis was confirmed by microscopy. The life stages of *Demodex canis* mite have been highlighted in slides clarified with paraffin oil or lactophenol (Fig.6).



**Fig. 6.** *Demodex canis*

Each patient's record sheet contained all patient information. Clinical signs (erythema, alopecia, squamae, hyperseboree) and microscopical examination of skin scraping have been evaluated weekly on a scale of 0-5.

The results of the clinical and parasitological evolution of each group during the 12 weeks of treatment are shown in Table 1.

**Table 1:** The clinical and parasitological evolution results

Săptămâna	Lot I (Demosymcan)					Lot II (Canider U)					Lot III (Gel)	
	E.	A.	S.	H.	P.H.	E.	A.	S.	H.	P.H.	C.H.	P.H.
1	5	5	5	5	5	5	5	5	5	5	5	5
2	4	5	5	4	5	5	5	5	5	5	5	5
3	3	4	5	3	5	5	4	4	5	5	5	5
4	2	4	3	3	5	4	4	4	4	5	5	5
5	1	3	1	1	5	4	3	3	4	4	5	5
6	0	3	0	0	4	3	2	2	4	4	5	5
7	0	2	0	0	3	3	2	1	3	3	5	5
8	0	1	0	0	3	2	1	1	2	3	5	5
9	0	0	0	0	2	1	1	0	1	2	5	5
10	0	0	0	0	2	0	1	0	1	2	6	5
11	0	0	0	0	1	0	0	0	1	1	6	5
12	0	0	0	0	1	0	0	0	0	1	6	5

Legend: E - erythema, A - alopecia, S - squamae, H - hyperseboree, P.H. - parasitological healing, C.H.- clinical healing

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Descriptive statistic establishes significant differences between the three groups. In group I treated with Demosymcan Gel, clinical and parasitological recovery were significant ( $p = 0.000 < 0.05$ , respectively  $p = 0.003$ ). The results of the statistic test indicate that Demosymcan Gel has the highest therapeutic efficacy.

It is widely accepted that the successful treatment of this parasitosis involves knowing the biology of the parasite, making it difficult to find an acaricide that is efficient against mites and, at the same time, harmless to the dog, the skin being a rather fragile structure when contacted with the therapeutic substances (1, 7, 10, 11).

The presence of *Demodex* mite leads to a change in skin microclimate: alkalinisation of pH, changes in the composition of the lipid layer, increase in the concentration of fatty acids, reactions leading to an irritant effect of most topical formulations. More over, the complex mechanism of skin absorption is influenced by the nature of the base, the condition of the skin and the biological factors.

15 years ago, the first therapeutic study in canine demodicosis was initiated using a non-acaricid product (8). The results obtained were re-evaluated and developed, and the final result is the Demosymcan Gel Patent Application for the treatment of dry lesions from canine demodicosis, product used for group I.

The results of the present study reveal a higher therapeutic efficacy of the above-mentioned product compared to the Canider U, the clinical healing and the negative microscopic examination of the skin scraping being noted in a shorter time in group I (at 8 weeks and 14 weeks after the onset of treatment), compared to group II.

At international level, there are therapeutic studies that support the treatment of canine demodicosis with herbal substances, plant extracts, non-irritating for skin but efficient in remitting clinical signs and in parasitic healing: the Maggacite product administered twice a day, the Homeopathic, Product Graphitis 200 administered daily, AV / EPP / 14, Gliricidia (*Gliricidia sepium* decoction), Dermanol, Anbioflam, Immuplus, Ectozee (6, 9).

This comparative therapeutic study between a synthesis product, Canider U, containing amitraz and neomycin (lot II) and a natural product, Demosymcan Gel, containing honey, propolis, apple vinegar and hydro-glycero-alcohol extracts from the buds of various plants (group I) revealed a remission of clinical sign at 8 weeks after the onset of treatment and a negation of the microscopic examination of cutaneous lesions at 14 weeks after the onset of treatment - group I over the longer time- it requires the treatment applied to group II, a result that joins the research that recomand natural, non-invasive therapy for skin.

A therapeutical study (4) conducted in Craiova on a group of 66 dogs diagnosed with demodicosis and treated with Demosymcan Gel (Lot I) and Canider U (Lot II) allows us to highlight the comparative results: remission of clinical sign (erythema, alopecia, squamae, hyperseboree) and the negative microscopic examination of cutaneous scraping from lesions were reported at 8 and 14 weeks in group I treated with the product containing honey, propolis, apple vinegar and vegetable extracts, and at 12 and 16 weeks respectively in group II, where the product was based on amitraz and neomycin. The results of this study reveal that clinical and parasitological healing have been achieved in a shorter time compared to the results of the therapeutic researches carried out in the dogs in Mehedinți County (4).

## **Conclusions**

The clinical signs remission (erythema, alopecia, squamae, hyperseboree) and negative microscopic examination of skin scraping from lesions were reported at 9 and 15 weeks in group I

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treated with the product containing honey, propolis, apple vinegar and extracts plant and 12 and 16 weeks, respectively, in lot II, where the product was based on amitraz and neomycin.

Exacerbation of clinical signs and presence of mite in microscopic slides were revealed in the control group, to which a gel containing no ingredient was applied.

We recommend Demosymcan Gel for treatment of dry lesions in canine demodicosis, applied daily on lesions.

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