DERMYCIS

Shampoo and wipes infused with essential oils for dogs with greasy, itchy skin

DERMYCIS < DÉR-MY-CIS

The name is inspired by the Greek word « δέρμα», which means «skin» Liddell G, Jones HS, Scott R, McKenzie R. *A Greek-English Lexicon*. Oxford: Clarendon Press; 1940.

A deeply purifying formula inspired by the antimicrobial properties of essential oils from Mediterranean aromatic plants. Problematic skin with pruritus, erythema, greasiness, scaling and malodor in dogs can occur due to opportunistic pathogens (e.g., *Malassezia* sp. ¹). Furthermore, *Malassezia* yeasts and *Staphylococcus* spp. Gram positive bacteria are responsible for concurrent infection in canine atopic dermatitis. Natural products such as essential oils with antimicrobial properties could represent a suitable alternative in the treatment of infections, whether primary or secondary.

Tea tree oil

Because of its known antifungal and antibacterial properties, tea tree oil (from *Melaleuca* endemic in Australia species) has been used as a veterinary topical antiseptic for dogs for many years, in formulations containing up to 5-10% of it².

In clinical trials in the veterinary practice³⁻⁴, efficacy and safety of a standardized 10% tea tree oil cream was evaluated in dogs with chronic dermatitis, particularly non-specific eczema, allergic dermatitis, interdigital pyoderma, acral lick dermatitis and skinfold pyoderma.

Tea tree oil is not to be suitable for use in cats due to several reports of "tea tree oil poisoning" in cats, as felines are incapable of glucuronidation (glucuronide metabolism) leading to a very slow excretion of certain tea tree oil's components from their bodies².

Oregano oil

Origanum vulgare L. is a widely used aromatic plant, especially due to its content in essential oil (OEO), mainly rich in carvacrol and thymol. As it has been shown by an increased number of studies in the field, OEO is presented as an efficient alternative antimicrobial agent against both Gram-positive and Gram-negative bacteria, as well as a potent antifungal agent⁵.

Although the conventional therapy against dermatophytosis is based on antifungal drugs and environmental disinfection, the emergence of itraconazole (ITZ)-resistant dermatophytes has encouraged the search for active compounds, such as (OEO). In a recent study⁶, OEO stood out for acting against all dermatophytes, even against

itraconazole-resistant isolates. Moreover, according a recent study⁷, OEO was proven very active against all staphylococcal strains tested thus could be a promising agent to combat canine cutaneous mixed infections.

Treatment of 20 dogs affected by dermatitis due to *M. pachydermatis*, with a commercially available mixture consisting of essential oils has been also reported⁸. On day 30th treated animals significantly improved their clinical status, without any adverse effects noticed. *O. vulgare* showed the lowest minimum inhibitory concentrations (MIC), being active at 0.8%.

Thyme oil

Thyme essential oil, has shown remarkable antibacterial effects, which are associated with the presence of its phenolic components, carvacrol and thymol¹⁰.

In a study of essential oils and their components against fungal pathogens of animal skin, thyme was among the most active against the tested fungi⁹.

T. vulgaris essential oil, along with the aforementioned *O. vulgare* essential oil according a recent study⁷, were proven very active against staphylococcal strains tested in, thus could be a promising towards canine cutaneous mixed infections.

Peppermint oil

It is well established that menthol in peppermint essential oil (*M. piperita*) can weaken itching caused by histamine through cooling the skin, by activation of A-delta fibers and κ -opioid receptors¹².

Oregano, thyme and peppermint essential oils have exhibited synergistic interactions with clotrimazole against 19 strains of *M. pachydermatis* isolated from healthy dogs and reference strain *M. pachydermatis* CBS 1879 which could improve effectiveness of this antifungal drug¹¹.

Treatment of 20 dogs affected by dermatitis due to *M. pachydermatis*, with a commercially available mixture consisting of essential oils has been also reported⁸. On day 30th treated animals significantly improved their clinical status, without any adverse effects noticed. *M. piperita* oil exhibited the second vulgare lowest minimum inhibitory concentrations (MIC), being active at 1%.

Mastic oil

Chios mastic gum (from *Pistacia lentiscus* tree exudates) constitutes a unique Greek natural product, received exclusively from the above-mentioned trees in the southern part of the island of Chios. Chios mastic's beneficial properties have been demonstrated in wound healing and oral care¹³, as well as against skin inflammations. These properties are mostly attributed to triterpenes and volatile compounds content.

Antifungal activity has been attributed to the aqueous extract of mastic¹⁴, which was found to be active against *Microsporum canis*, *Trichophyton mentagrophytes* & *Trichophyton violaceum*, by decreasing their colonies' growth from 36% to 100%.

In house, IN VITRO STUDIES (unpublished data)¹⁵

Modified and adapted for dermatophytes CLSI M44A Ed3 method for yeasts was applied using the hole diffusion method. The microorganisms tested were *Trichophyton mentagrophytes* (n=10); *Microsporon canis* (n=10); *Microsporon gypseum* (n=10) and *M. pachydermatis* (n=10). Plates were incubated at 32°C for 48h – 96h depending on growth rates of dermatophytes and *M. pachydermatis* strains tested, then the zones diameter inhibitions were measured.

Origanum oil appeared as the most active against all assayed fungi *M. canis and M. gypseum* (20.3 mm) (Fig. 1), *T. mentagrophytes* (20.5 mm) (Fig. 2), *M. pachydermatis* (10.40 mm) (Fig. 3). Tea tree oil showed also strong activity against *M. canis* and *M. gypseum* (10.1 mm) (Fig. 1). The combination of all assayed EOs in a ratio between them similar to the one by which they are included in the Dermycis formula exerted an interesting activity against *T. mentagrophytes* (10.0 mm) (Fig. 2). All other EOs did not cause significant dermatophyte inhibition (<10 mm inhibition zone).



Fig. 1. Compounds C (Oregano oil) and D (Tea tree oil) against *M. canis*



Fig. 2. Compounds C (Oregano oil) and F (Dermycis mixture of oils) against *T. mentagrophytes*



Fig. 3. Compounds C (Oregano oil), E (Thyme oil), and F (Dermycis mixture of oils) against *M. pachydermatis*

TESTIMONIALS¹⁶

A cleaning formulation containing Tea tree oil, Oregano oil, Thyme oil, Peppermint oi and Mastic oil as bioactive ingredients has been evaluated in vivo for its potential soothing properties on 2 dogs as follows:

- *i)* Dog with interdigital pododermatitis (veterinarian in Crete, Greece);
- *ii)* Dog with interdigital cyst (veterinarian in Athens, Greece);

In both cases, skin lesions were restored and no relapse was noticed.

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