

CANINE PRACTICE - DERMATOLOGY

A pilot study on the use of commercial veterinary emollients, one with Novasomes™ and one without Novasomes™.

ABSTRACT. Twenty dogs with wintertime dry skin were treated with two commercial veterinary emollients. All dogs received weekly treatment for four weeks according to manufacturer's recommendations. In one-half of the dogs treated, the treatment was initiated with Micro Pearls™ (two weeks) and followed with Humilac® (two weeks). This sequence was reversed for the other one-half of the dogs. Micro Pearls™ was the superior product in 16 of the 20 dogs (80%). Side effects were rare with either product.

A CLINICAL STUDY ON THE EFFICACY OF TWO COMMERCIAL VETERINARY EMOLLIENTS (Micro Pearls™ and Humilac®) IN THE MANAGEMENT OF WINTERTIME DRY SKIN IN DOGS

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Introduction

ABNORMAL keratinization is either a primary or a principal event in the majority of dermatologic disorders seen in clinical practice (1,2). In dogs, keratinization disorders may be primary or secondary to a very large number of factors (1,3-5).

Hyperkeratinization is principally due to decreased rates of desquamation (most associated with increased corneocyte cohesion) and/or increased rates of corneocyte production (associated with a reduced epidermal turnover time) (1,2,6). The presence or absence of water influences the physical properties of the stratum corneum and, thus,

desquamation (1,2,6). The stratum corneum exhibits an avidity for water presented to it, imbibing it in quantities that cause excessive swelling. The avidity for imbibing water is *not*, however, matched by an equivalent avidity for binding water, which results in water loss during periods of low ambient humidity.

Relevant to the problem of "dry skin" is the fact that, in ambient atmospheres of low relative humidity, the stratum corneum fails in the competition for moisture. Skin loses moisture to the air whenever the ambient relative humidity drops below 40% (2). The stratum corneum becomes dehydrated and less flexible, thereupon cracking both because of its relative inflexibility and because shrinkage due to water loss causes fissures. Equally important is the influence of water, and its absence, on desquamation: the stratum corneum eventually becomes thickened histologically and clinically (2,6).

In both dogs and humans, dry skin is commonly seen secondary to a lack of humidity in heated rooms during winter months (1-7). Forced air heating is the worst in this regard, and often causes dogs and humans with

previously normal skin to develop dryness and, occasionally, variable degrees of pruritus. Traditional bathing and shampoo protocols usually exacerbate this problem, and emollients and humectants are the cornerstones of symptomatic therapy (1,2, 7-9). Oral treatments, such as vegetable oils and fatty acids, are not usually beneficial (1,2, 7-9).

Emollients are agents used to lubricate, rehydrate, soften, moisturize, and soothe the skin (1,7-14). Emollients include fats, oils, and humectants. Fats and oils soften skin by forming an occlusive oil film on the stratum corneum, thus preventing drying from evaporation of the water that diffuses to the surface from underlying layers. Emollient oils include olive, cottonseed, peanut, and coconut oil (8,10). Bath oils are highly dispersible agents that have emulsifiers to distribute the oil in water (8,10,12). Lanolin is animal fat from the wool of sheep. Hydrocarbons include paraffin, petrolatum, and mineral oil (8,10,12,13).

Humectants are hygroscopic agents which bind to stratum corneum, attract and bind water, thus rehydrating the horny layer without using oil (1,6,8,10,12). Popular humectants include alpha hydroxy acids (such as lactic acid), urea, propylene glycol, and glycerin (1,6,8,10,12).

The purpose of this article is to report the results of a clinical study on the efficacy of two emollient products in the management of wintertime dry skin in dogs.

MATERIALS AND METHODS

The first 20 dogs that satisfied our criteria for wintertime dry skin, and whose owners accepted our protocol, were entered into the study and assigned to a product sequence in alternating order (Table 1). All dogs had a history of recurrent dry skin during winter months, had similar degrees of clinical severity, but were otherwise healthy. The dogs had not received any topical therapy withing the last several weeks prior to entry into the trial.

Two commercial veterinary emollient products were used. The products were packaged in identical 6 ounce flip-top bottles labeled "D" or "E". Product D was a hypoallergenic, moisturizing cream rinse (Micro Pearls™ Cream Rinse for Dogs and Cats, EVSCO Pharmaceuticals, Buena, NJ). Product E was an oil-free humectant (Humilac® Dry Skin Spray and Rinse, Allerderm, Inc., Ft. Worth, TX).

Both products were used according to the manufacturer's directions. The dogs were not bathed during the study. Product D was applied liberally after the animal was wetted with water, worked into the coat, and rinsed off with water. Product E was applied as a rinse (5 capfuls of the concentrate per 1 quart of water) and allowed to dry on the animal. With either product, the owners were told not to

EFFICACY OF EMOLLIENTS

Table 1. Clinical and therapeutic data on 20 dogs with wintertime dry skin

Case	Breed	Age (Yrs.)	Sex	Sequence	Product Preference
1	Mongrel	6 1/2	MC	1	D
2	Mongrel	5	F	2	D
3	Mongrel	6	MC	1	D
4	Doberman pinscher	2 1/2	MC	2	D
5	Border terrier	6	F	1	equal
6	Mongrel	10	FS	2	equal
7	Labrador retriever	2	F	1	equal
8	Mongrel	13	FS	2	D
9	German shepherd	5	FS	1	E
10	Mongrel	13	MC	2	D
11	English springer spaniel	9	FS	1	D
12	Irish setter	3	M	2	D
13	Rottweiler	5	M	1	D
14	Bichon frise	5	FS	2	D
15	Doberman pinscher	4	M	1	D
16	German shepherd	4	FS	2	D
17	Newfoundland	4	MC	1	D
18	German shorthaired pointer	7	MC	2	D
19	Cairn terrier	5	M	1	D
20	Mongrel	8	M	2	D

*In sequence 1, dogs received product D first, followed by product E. The order was reversed for sequence 2.

towel the dogs dry, but rather to let them drip-dry or to gently blow-dry with a portable hair dryer.

All dogs were treated with both products. One-half of the dogs received a weekly treatment for 2 weeks with product D, followed by a weekly treatment for 2 weeks with product E. This sequence was reversed for the other one-half of the dogs. No other therapies were allowed.

All dogs were treated by their owners at home. The owners were given a detailed treatment evaluation form to be used during the 4 weeks of study. The following criteria were evaluated on a weekly basis, and graded from severe to moderate to mild: dryness of skin, dryness of hair coat, scaliness, and pruritus. In addition, the owners were asked to note any apparent adverse reactions. All owners were contacted by telephone after their dogs had completed the 4-week study.

RESULTS

Some clinical and therapeutic data are presented in Table 1. Affected dogs represented several breeds as well as mongrels. The dogs ranged from 2 to 13 years of age, and males and females were equally represented.

The typical dog in this study had moderate-to-severe, fairly generalized dryness of the skin and hair coat, and moderate-to-severe scale formation. The truncal area was most severely affected in all dogs. Only 5 dogs and pruritus, which was graded as being mild-to-moderate.

Product D (Micro Pearls™ Cream Rinse for Dogs and Cats) was the superior agent in 16 of the 20 dogs (80%), resulting in a reduction of all parameters evaluated to a level of mild or "normal". In seven of these sixteen dogs, product D was the initial agent used. Owners reported that all parameters began to deteriorate when treatment was switched to product E (Humilac® Dry Skin Spray and Rinse). In the other nine dogs, product D was the second agent used. Owners reported definite improvement compared to the initial two weeks of therapy with product E.

In three dogs (15%), the owners reported that both products were equally effective. In two of these dogs, therapy was initiated with product D; the other dog began with product E.

In one dog (5%) product E was reported to be superior. The dog showed minimal response to the initial product D, then a dramatic improvement with product E.

Side effects were reported in only two dogs. Case 3 was reported to roll on his back, as if irritated, for about 1 1/2 minutes after receiving product D. In spite of this, product D was reported to be the superior therapeutic

agent. Case 8 was reported to develop moderate cutaneous irritation (diffuse erythema, moderate pruritus) following the application of product E.

DISCUSSION

Wintertime dry skin is a well-recognized dermatosis of dogs, and can be quite aggravating for owners and patients alike (1,3-5,7). This is a common syndrome in the northeastern United States associated with the low relative humidity in heated domiciles. Traditional bathing and shampoo regimens usually exacerbate this condition, and emollient-humectant therapy is indicated (1,3-5,7-9).

In the past, emollient therapy for dogs consisted primarily of various commercial human bath oils (1,5,7-9,11-14). Although these products were usually effective, their oiliness often created cosmetic problems, such as oily residues on the dogs and, hence, their immediate environment (1,8,9,12-14).

In the last ten years, great improvements have been made in the cosmetic acceptability of emollients and humectants available for use on canine patients. There are currently a number of non-oily, non-irritating, hypoallergenic emollient-humectant products available (1,7-9,12,14). Although these products are variously touted and decried by veterinarians, there are apparently no clinical studies published wherein the relative merits of these products were evaluated.

At this clinic, Humilac® (product E) has been used as the emollient of choice for wintertime dry skin. This product contains four humectant agents: propylene glycol, urea, lactic acid, and glycerin. Of particular interest in this product is the alpha hydroxy acid, lactic acid. In addition to their humectant properties, these organic acids diminish corneocyte cohesion, possibly by interfering with enzymes important in the formation of sulfate and phosphate bond linkages (6).

Micro Pearls™ is a recent addition to the emollient field in veterinary medicine. This product is the first to employ liposome encapsulation technology (15). Novasome® capsules attach to hairs and release their contents as they naturally degrade, creating a long-lasting effect (15). Because of the water and fatty acid content of their walls, Novasomes® tend to keep moisture levels constant (15), thus acting as potent humectants. Micro Pearls™ Cream Rinse also contains poly-pentaerythrityl tetralaurate, cyclomethicone, and cetyl alcohol as emollients.

Micro Pearls™ was the preferred product in 80% of the cases studied. Clinical efficacy was apparently not related to breed, age, sex or size of the dogs, nor to duration of disease. Neither were the results dependent upon which therapeutic sequence was followed (i.e., which product was used initially). Owners of the dogs in

this group were always able to see a difference in the appearance of their animals, based on which product was being used. Side effects were rarely reported with either product. Both products are easy to use, commercially available, and of similar cost.

In conclusion, the Micro Pearls™ product was shown to be superior to Humilac® in this study. It is likely that the Micro Pearls™ product would also be of benefit in dogs who have "dry skin" secondary to other common triggering factors, such as the use of drying topical medicaments (medicated shampoos, insecticidal dips),

hormonal imbalances (hypothyroidism, hyperadrenocorticism), superficial staphylococcal dermatoses, and idiopathic seborrhea sicca (1,4,5,8). further clinical studies in these areas are warranted.

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