Treating skin disease

Investigator: Dr. Thierry Olivry
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Status: Year 1 of 1

Dr. Olivry is using MAF funding to study a potential treatment for atopic dermatitis in dogs. He is a professor at North Carolina State University and an adjunct clinical associate professor of dermatology at the University of North Carolina. He received his veterinary degree from the University of Toulouse, France, and his Ph.D. in comparative pathology from the University of California-Davis.

What is atopic dermatitis?
Dr. Olivry: Atopic dermatitis is a genetic chronic, recurrent, inflammatory and itchy skin disease. It is associated with hypersensitivity to environmental allergens that include most commonly house dust mites, pollens and food allergens.

What breeds are most commonly affected?
Dr. Olivry: Because it is genetically transmitted, there is a breed predisposition to develop the disease. At this time, in the USA, the following breeds appear predisposed: Labrador, golden retrievers, West Highland white terriers, Cairn terriers, Boston terriers, Dalmatians, among others.

How common is it?
Dr. Olivry: It is very common. The exact incidence in the USA is not known, but prevalence is estimated to be 5 to 10 percent of the dogs presented to their veterinarian for illness.

How effective are current treatments or drugs?
Dr. Olivry: There are two main strategies for treatment of this disease. The first are strategies to prevent the disease from occurring. These interventions include allergen avoidance (that is removing the allergens known to cause flares of the disease) and allergen-specific immunotherapy (a.k.a desensitization, hyposensitization).

The second strategies involve drug interventions to treat skin lesions once they have occurred. At this time, only two groups of drugs have good evidence of good efficacy: topical or oral glucocorticoids (steroids) and topical or oral calcineurin-inhibitors (oral cyclosporine or topical tacrolimus ointment). Type 1 antihistamines have been used for decades, but there is insufficient evidence that they reliably reduce skin lesions or itching.

What do you hope to learn from you study?
Dr. Olivry: It is suspected that part of the lack of demonstrable efficacy of the type 1 antihistamines may be due to incorrect dosage or abnormal metabolism of the drug.

Indeed, most if not all trials using antihistamines to treat dogs with atopic dermatitis have relied on dosages used to treat humans with allergic rhinitis. Such dosages of antihistamines may not be effective to treat dogs. For example, the antihistamine clemastine was once perceived to be one of the most effective antihistamines in dogs, but two studies confirmed that this drug is metabolized rapidly in dogs and horses. Less than 5 percent of the drug survives passage through the liver, which means this antihistamine does not appear to achieve its effect after oral use in dogs, although it does work intravenously. We wonder whether the same phenomenon could occur with other antihistamines.

Our study, which is a collaborative effort between Drs. Bizikova, Papich and myself, aims at determining whether the common antihistamine, hydroxyzine, when given orally is effective in inhibiting histamine-induced skin reactions. Modeling of drug metabolism will help determine the best dosage and frequency of administration necessary to achieve an antihistamine effect in canine skin.

Results so far that you wish to share?
Dr. Olivry: Our results have shown that hydroxyzine is rapidly transformed into another antihistamine, cetirizine. The inhibition of histamine reactions appears to be due to the effect of cetirizine, not hydroxyzine. Pharmacologic modeling suggests that twice daily administration of hydroxyzine should be sufficient for adequate and relevant antihistamine effect.

Why should the average animal lover care about your study?
Dr. Olivry: Once an effective dosage and frequency of administration of hydroxyzine are determined for dogs, we will perform a clinical trial determining whether this antihistamine can help prevent flares of the disease. If this approach works, then we would have another strategy to delay or prevent recurrence of skin lesions once they have entered remission.