

Sublingual Immunotherapy for Atopic Dermatitis

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Allergen-specific immunotherapy (ASIT) is a common atopic dermatitis (AD) treatment for dogs and cats. The newest variation of this treatment is sublingual immunotherapy (SLIT).

Although SLIT has been widely used in Europe for treating human allergies, it has only recently become available for treating animals in the United States. Mechanisms for injection ASIT differ slightly from SLIT. SLIT involves absorption of allergens through the oral mucosa with uptake and processing by specialized oromucosal dendritic cells.¹ SLIT is formulated differently than the allergy injection mixture; commercial preparations of SLIT typically include proprietary ingredients to stabilize the allergen and promote mucosal absorption. Currently, several SLIT suppliers offer their own formulations with different administration protocols, storage conditions, efficacy, adverse events, and other use-associated factors; because the therapy is new, studies on these factors are still underway. SLIT is administered via a metered pump dispenser that delivers drops of solution onto the mucosa under and around the tongue (Figure 1, next page).

Indications & Contraindications

SLIT is primarily indicated for treatment of AD in dogs; results in cats and horses have not been reported. Patient evaluation for allergies is performed in the same manner for injectable ASIT and SLIT (see **Steps for Evaluation & SLIT Treatment**, next page, for an outline of the typical workup). Following clinical diagnosis of AD and elimination of other possible causes of pruritic dermatitis (eg, food allergy, parasitism), allergy testing should be performed with an intradermal test or allergen-specific IgE serologic test panel to identify each patient's sensitivities. Concentrated allergen extracts should then be mixed by the SLIT supplier according to each patient's reactivity and administered, starting with small doses and gradually escalating to larger doses over several (typically 1–3) months. During the initial months of treatment, antiinflammatories may be given and slowly tapered as response occurs.

SLIT does not have specific contraindications for AD patients. Currently, SLIT is limited to environmental allergens (eg, dust and storage mites, pollens, molds) and has not been evaluated for

Diagnostic Criteria for Canine AD

AD is highly likely if ≥ 5 of these criteria are present *and* other differentials have been ruled out³:

- ✓ Age of onset <3 years
- ✓ Dog mostly indoors
- ✓ Corticosteroid-responsive pruritus
- ✓ Chronic or recurrent yeast infections
- ✓ Affected front feet
- ✓ Affected ear pinnae
- ✓ Nonaffected ear margins
- ✓ Nonaffected dorsal lumbosacral area

AD = atopic dermatitis, ASIT = allergen-specific immunotherapy, SLIT = sublingual immunotherapy

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Steps for Evaluation & SLIT Treatment

1. A tentative diagnosis of AD should be established by confirming that the dog fulfills appropriate historical and clinical criteria (see **Diagnostic Criteria for Canine AD**, page 13).³
2. A firm clinical diagnosis of AD should be established by eliminating all other pruritic diseases that may mimic AD. This will typically involve:
 - Identifying and treating secondary bacterial or yeast infections
 - Eliminating fleas and ruling out other parasitic causes of pruritus (eg, *Sarcoptes* spp)
 - Eliminating food allergens as a factor via dietary restriction provocation trials
3. A serologic test (eg, allergen-specific IgE panel) and/or intradermal testing should be performed to identify specific allergens to which the dog is sensitive.
4. Test results should be provided to the SLIT supplier to formulate a treatment individualized for the patient. The veterinarian can specify which allergens are to be included in the treatment set or base selection on the advice of the SLIT supplier.
5. SLIT administration should be demonstrated, the schedule explained, and the importance of compliance emphasized to the owner. The treatment set and any concurrent medication necessary for temporary relief should be dispensed.
6. Recheck examinations should be scheduled q3mo during the initial year of SLIT. At each recheck examination, concurrent medication should be tapered and the patient assessed for adverse events or development of secondary complications (eg, staphylococcal or yeast infection).
7. If an adverse event is suspected, a medical consultant at the SLIT supplier should be contacted; suppliers are often a good source of information for how to revise the formulation to address adverse events.

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Typical metered-dose dispensing bottle (A); the end of the dispenser is hooked over the lower arcade of teeth and the dispenser is actuated (B).



A

B

management of food or flea allergies. SLIT has been used successfully for treating human peanut allergy,⁴ possibly indicating that further study may prove its usefulness for veterinary food allergies.

Advantages

ASIT, including SLIT formulations, is the only therapy that modifies part of the underlying disease pathogenesis (ie, it is designed to reverse the allergy rather than mask signs with anti-inflammatory drug treatment). SLIT has some benefits:

- SLIT has a relatively easy, small volume, needle-free method of administration.
- For mold allergy, some SLIT formulations allow mixing mold extracts in the same vial, which is often not recommended for allergy injections (depending on the supplier).
- Some formulations can be stored at room temperature.
- Anaphylactic reactions to SLIT are rare; with injection ASIT, anaphylactic reactions may occur in ~1% of patients and can be severe enough to necessitate stopping treatment.
 - Anecdotally, some SLIT formulations can be used safely even if there is a history of anaphylaxis from allergy injections.
- SLIT reportedly works in some cases of failed allergy injection treatment, perhaps because of its different mechanism of action.
 - In one study, nearly 50% of dogs that failed allergy injection treatment showed response to SLIT.²
- The cost is comparable with that of injection ASIT.

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Disadvantages

- Like injection ASIT, SLIT does not work immediately (typically taking 3–6 months) or in every dog.
- Currently only one study has reported the effectiveness of a commercial SLIT product (Allercept Therapy Drops, heska.com).
 - The study reported ~60% response, which is comparable with injection ASIT.²
- SLIT requires direct administration via a small pump dispenser and is typically administered q12h every day.
 - Although sublingual administration may be easier than injections, clients may find q12h schedule cumbersome.
- Mild adverse events are possible (eg, face rubbing, stomach upset postadministration, transient worsening of signs) but typically disappear within 1–2 weeks.
 - If signs persist, they can be managed by altering the dose schedule.

Both injection ASIT and SLIT are long-term treatments; owners must be willing to try treatment for 6 to 12 months. If response

occurs, continued administration for several years may be necessary.

Clinical Impact

SLIT may be a convenient, affordable, safe, and drug-free option for owners who are not enthusiastic about giving their pets injections. For now, there is insufficient evidence to decipher whether SLIT or injection ASIT is more effective. Thus, recommendations should be based mostly on owner preference, keeping in mind, however, that SLIT can provide cutting-edge medicine to more patients. ■ **cb**

See **Aids & Resources**, back page, for references & suggested reading.

In addition to his university affiliation, Dr. DeBoer consults with Heska Corporation. Neither the University of Wisconsin–Madison nor Dr. DeBoer has any financial interest in any SLIT product.



WEIGHT EXCHANGE:

Nutrition for overweight arthritic dogs

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What is the role of nutrition in managing osteoarthritis (OA) in dogs?

Diet selection and caloric intake can figure significantly in the nutritional management of canine OA. Excess weight can contribute to the development and progression of OA via several mechanisms, including increased mechanical stress on joints; while weight reduction can relieve joint stress and OA symptoms.¹ However, diet is only part of the solution. A multimodal approach — which may include concurrent medical management of pain

and inflammation, exercise, and physical therapy — is important.

How do long-chain omega-3 fatty acids help dogs with OA?

Inflammation plays a key role in the pathogenesis of OA. Long-chain omega-3 fatty acids derived from fish oil can help modulate inflammation. Purina Veterinary Diets® JM Joint Mobility® Canine Formula contains a high level of long-chain fatty acids. In one 13-week study,² 30 pet dogs each weighing more than 44 pounds that had naturally occurring OA received either JM dry or a control diet similar in nutrient content to JM but with a different fat source. Dogs fed JM, the diet enriched with omega-3 fatty acids, had significantly higher peak vertical force (PVF) when measured at weeks 7 and 13 compared to baseline. Control-fed dogs had no significant change in PVF compared to baseline.

Is it best to reduce weight or manage OA first in an overweight, arthritic dog?

Each patient should be assessed by a veterinarian. The choice of diet will depend on the severity of the arthritis and the obesity. However, as a general guideline, if a dog is obese, it's usually best to first reduce its weight with a low-calorie diet geared specifically for weight management. If an arthritic dog is only slightly overweight due to overfeeding, feeding JM at an appropriate caloric intake can help reduce weight and provide the benefits of long-chain omega-3 fatty acids.



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1. Mlacnik E, Bockstahler BA, Muller M, et al. Effects of caloric restriction and a moderate or intense physiotherapy program for the treatment of lameness in overweight dogs with osteoarthritis. *J Am Vet Med Assoc* 2006;229:1756–60.
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