

EQUINE ALLERGY LITERATURE – SUMMARY TABLE & QUOTES

COMMONLY USED ABBREVIATIONS: ASIT = Allergen-specific immunotherapy IBH = Insect bite hypersensitivity AD = Atopic dermatitis IDT/IDAT = Intradermal testing / Intradermal allergy testing MASTs = multiple allergen stimulation tests	ASIT	SEROLOGY VS IDT	ASTHMA	IBH	ATOPIC DERMATITIS
Radwanski, N.E., Morris, D.O., Boston, R.C. et al. (2019). Longitudinal evaluation of immunological responses to allergen-specific immunotherapy in horses with IgE associated dermatological disease, a pilot study. <i>Vet Dermatol</i> ; 30: 255–e78.	✓	✓			✓
Marteles, D., Odriozola, L., Verde, M.T. et al. (2019). Assessment of serum allergen-specific IgE levels in horses with seasonal allergic dermatitis and recurrent airway obstruction in Spain. <i>Acta Veterinaria Hungarica</i> ; 67: 11-21.		✓	✓		✓
Wilkołek, P., Szczepanik, M., Sitkowski, W. et al. (2019). A Comparison of Intradermal Skin Testing and Serum Insect Allergen-specific IgE Determination in Horses with Insect Bite Hypersensitivity From 2008 to 2016. <i>Journal of Equine Veterinary Science</i> ; 75: 65e68.		✓		✓	
Forsyth, J., Halliwell, R.E. & Harrand, R. (2019). Co-reactivity between related and unrelated environmental allergens in equine allergen-specific IgE serology testing in the UK. <i>Vet Dermatol</i> ; Aug 28 [Epub ahead of print]	✓	✓	✓	✓	✓
Loeffler, A., Herrick, D. Allen, S. et al. (2018). Long-term management of horses with atopic dermatitis in southeastern England: a retrospective questionnaire study of owners' perceptions. <i>Vet Dermatol</i> ; 29: 526–e176.	✓				
White, S.D. (2017). The pruritic (itchy) horse: how to approach and treat it. In: Proceedings of the 29 th Annual Congress of the European Society and College of Veterinary Dermatology, Lausanne, 2017.	✓	✓			✓
Mueller, R.S. (2016). Allergen testing and immunotherapy in the horse. In: Proceedings of the 8th World Congress of Veterinary Dermatology, Bordeaux 2016.	✓	✓			✓
Mueller, R.S., Janda, J., Jensen-Jarolim, E. et al. (2016). Allergens in veterinary medicine. <i>Allergy</i> ; 71: 27-35.	✓	✓	✓		✓
White, S.D. (2016). Approach to Equine Pruritus. In Proceedings of the 8th World Congress of Veterinary Dermatology, Bordeaux 2016.		✓			
Yu, A.A. (2016). Equine Atopic Dermatitis – Management. In Proceedings of the 8th World Congress of Veterinary Dermatology, Bordeaux 2016; 367-374.	✓				
Jensen-Jarolim, E., Einhorn, L., Herrmann, I. et al. (2015). Pollen allergies in humans and their dogs, cats and horses: differences and similarities. <i>Clinical and translational allergy</i> ; 5:15.		✓	✓	✓	✓
Marsella, R. (2013). Equine allergy therapy: Update on the treatment of environmental, insect bite hypersensitivity, and food allergies. <i>Vet Clin North Am Equine Pract</i> ; 29: 551-557.		✓			✓
Fadok, V.A. (2013). Update on equine allergies. <i>Vet Clin North Am Equine Pract</i> ; 29: 541-550.		✓		✓	✓
Stepnik, C.T., Outerbridge, C.A., White, S.D et al. (2012). Equine atopic skin disease and response to allergen-specific immunotherapy: a retrospective study at the University of California Davis (1991-2008). <i>Vet Dermatol</i> ; 23 :29-3.		✓			✓
Loewenstein, C. & Mueller, R.S. (2008). A review of allergen-specific immunotherapy in human and veterinary medicine. <i>Vet Dermatol</i> ; 20: 84.	✓				

Radwanski, N.E., Morris, D.O., Boston, R.C. et al. (2019) ■ ■ ■

“ASIT in horses with AD provided significant clinical benefit associated with a concomitant reduction of allergen-specific IgE and elevation of IgG”

“Improvement in clinical signs was noted in 76.5% of the horses following 12 months of ASIT and in 82% after 24 months on ASIT”

“Our results were consistent at the 12-month evaluation with other studies that have shown a noticeable clinical response to ASIT for pruritic horses with AD, horses with urticaria and horses with combined AD and IH”

“significant differences in outcomes were not detected regardless of the testing modality used for allergen selection. There was also excellent agreement between serum allergen-specific (IgE) and both immediate and delayed IDAT reactions. Therefore, we propose that either test can be used to select allergens for ASIT”

“There was also no statistical difference in clinical response between horses that received treatment from a single vial versus two treatment vials”

Marteles, D., Odriozola, L., Verde, M.T. et al. (2019) ■ ■ ■ ■ ■

“Recent improvements in ELISA tests have increased the detection accuracy of allergen-specific IgE levels”

“Horses diagnosed with IBH may be hypersensitive to other allergens as well as to other insects”

Wilkołek, P., Szczepanik, M., Sitkowski, W. et al. (2019) ■ ■ ■ ■ ■

“This study found good agreement and correlation between IDTs and serological MASTs based on monoclonal antibodies for most of the determined allergens for horses with IBH”

“the in vitro measurement of allergen-specific IgE is the laboratory equivalent of clinical skin testing and is gradually replacing IDT techniques”

Forsyth, J., Halliwell, R.E. & Harrand, R. (2019) ■ ■ ■ ■ ■

“Horses frequently suffer from a combination of allergic conditions and consequently detection of all contributing allergenic stimuli is important for successful management”

“...causative allergens may be identified by an enzyme-linked immunosorbent assay (ELISA) for allergen-specific immunoglobulin (Ig)E and or intradermal tests (IDT) Correlation of these results with the clinical history is critical regardless of the method of allergen identification. Management strategies can include allergen avoidance, where practical, or allergen-specific immunotherapy (ASIT) which, in a limited number of studies, has been found to be beneficial in 60–80% of horses.”

(The results suggest) “the possibility that hypersensitivity to additional allergens may contribute to the clinical signs seen in horses diagnosed as suffering from Culicoides spp. hypersensitivity, which is an important consideration in their management.

Loeffler, A., Herrick, D. Allen, S. et al. (2018) ■ ■ ■ ■ ■

“Management strategies may also include allergen-specific immunotherapy (ASIT) based on the results of allergen-specific IgE detected by intradermal testing (IDT) and serological methods”

White, 2017 ■ ■ ■ ■ ■

“Intradermal tests (IDT) or serum allergy tests may be performed to identify allergens which may be used for hyposensitization (‘allergy shots’)”

“Atopic dermatitis has been successfully managed with hyposensitization, with horses showing improvement as early as 2 months into treatment”

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"While in other domestic species it is thought that most patients will need to be maintained on the injections for life, in the horse, this may not be true, as some horses had the hyposensitization injections stopped and did

not relapse.7 In general, approximately 70% of atopic horses improve with hyposensitization; other researchers have reported even better results, albeit in a non-controlled report"

Mueller, 2016 ■ ■ ■ ■

"Skin testing used to be the test of choice at least for atopic dermatitis in horses, but in recent years serum testing for allergen-specific IgE or basophil degranulation tests have gained importance in many countries"

"The allergens used in the test should be chosen according to their importance in the respective environment"

"Certainly the big advantage of serum tests is the convenience. Clients do not need to drive to a specialist, there are no waiting periods. The horse does not have to undergo sedation and does not need to be clipped in the area where it is tested"

"Overall, the success rate quoted in the various sources ranges from 60 to 70% of good and excellent responses to immunotherapy for cutaneous hypersensitivities to environmental allergens"

Mueller et al. 2016 ■ ■ ■ ■

"Allergen immunotherapy is an accepted and frequently conducted treatment for atopic dermatitis in the dog, cat and horse"

"Horses develop respiratory and skin diseases due to pollen allergens and show positive intradermal test results against tree, grass and weed pollens as well as pollen-specific serum IgE"

White, 2016 ■

The use of serological allergy testing during the diagnostic work-up of the pruritic horse is advocated. Under the title diagnostic tests it was stated *"these include skin scraping for ectoparasites, skin scraping for cytology, hair shaft examination, bacterial and/or fungal culture, skin biopsy, and intradermal and/or serologic testing for allergens"*

Yu, 2016 ■

The benefits of ASIT in horses were described as;

"1. Positive responses ranging between 60 to 80% efficacy 2. Minimal side effects (e.g., local injection reaction) 3. Decreased dosing frequency/workload for the owner (injections q 7-28 days) 4. Cost effective because it is a weight-independent therapy 5. Not a banned treatment by Fédération Equestre Internationale (FEI) and therefore can be used throughout show events, when allergies often affect patients 6. Unlike other therapies that provide symptomatic temporary relief, ASIT may achieve a cure/remission"

It was concluded that *"based on the above, ASIT in horses should be considered a viable therapeutic modality for long term control of insect hypersensitivity, recurrent urticaria/pruritus and recurrent airway obstruction"*

Jensen-Jarolim et al. 2015 ■ ■ ■ ■ ■

"Intradermal allergy tests or serum IgE tests may be chosen for further work-up and diagnosis for either skin or respiratory allergy"

"A chi-squared analysis used to compare the success proportions of SIT between skin tests, serum tests and both showed no statistical difference between the three groups"

"Diagnosis of hypersensitivity in horses can be made based on clinical symptoms, ruling out other differential diagnoses (e.g. parasites, food hypersensitivities and insect hypersensitivities especially in the dermatologic patients), and by serology with specific IgE diagnosis and intradermal testing"

"The clinical signs (for atopic dermatitis) are similar to those caused by insect hypersensitivity and it is extremely common to have both diseases in the same horse"

"Atopic dermatitis in equine is becoming a more commonly recognised disease, especially due to newer diagnostic methods and treatment options. It is interpreted in horses as an inherited predisposition to form specific antibodies to environmental allergens such as pollens of grasses, weeds, trees, but also to mold and dust"

Marsella, 2013 ■ ■ ■ ■ ■

"Debate exists on which type of allergy testing is best (but that) the single most important aspect in formulating a successful immunotherapy is not which test is used but how the allergens are selected (i.e., emphasis is placed on correlating the results with the seasonality and environmental exposure of the individual patient to increase the likelihood of including clinically relevant allergens among the ones that tested positive"

Fadok, 2013 ■ ■ ■ ■ ■

"Intradermal testing and ELISA serologic testing have been validated for this disease (referring to equine insect bite hypersensitivity)"

"diagnosis (for atopic dermatitis) can be made by intradermal testing and/or serum allergy testing"

Stepnik et al. 2012 ■ ■ ■ ■ ■

No preference was shown between serology or IDT. Only horses that had positive results obtained by either IDT or serological tests were included in the study that was assessing the response to ASIT

Loewenstein & Mueller 2008 ■ ■ ■ ■ ■

"Although there are few randomised controlled trials, multiple open studies suggest that ASIT is useful in the management of canine, feline and equine atopic dermatitis"

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