nextmuneuk laboratories

EQUINE ALLERGY TESTING – AN EVIDENCE BASED SOLUTION

Equine allergic disease is extremely common[1]
The UK estimated prevalence of equine allergic respiratory disease (now termed equine asthma)[2] is around 14%, of insect bite hypersensitivity (IBH) is 3-12% and atopic dermatitis is now becoming more frequently recognised.[3,4]

Allergies frequently occur in combination
It is the additive effect of multiple allergens/allergies that results in clinical signs for some horses once the allergic threshold is breached.[1,5,6] Identifying all separate allergies (IBH, atopic dermatitis, asthma, and food allergy) and contributing allergens (pollens, moulds, insects, food and mites) is essential for successful management in these cases.[1,6]

Allows additional management and therapeutic options
Management of allergic diseases in horses is challenging, requiring a multi-modal approach.[1,6,7] Allergen identification enables strategic allergen avoidance to be used (where practical) and the option of allergen-specific immunotherapy (ASIT). ASIT has been found to be beneficial in 60-80% of horses and is an evidence-based treatment modality which is not included on the FEI prohibited substances database.[5-8] At the last World Congress of Veterinary Dermatology (WCVD) it was concluded that: "***ASIT in horses should be considered a viable therapeutic modality for long term control of insect hypersensitivity, recurrent urticaria/pruritus and recurrent airway obstruction***".[6]

WHY USE SEROLOGICAL TESTING?

IDT and serology are both non-diagnostic
The provisional diagnosis of allergy must be made before either allergen identification test is used, through the systematic rule out of other conditions.[7,10] Results from either test must then always be interpreted alongside the clinical history.[1]

Advances in ELISA technology
Recent peer-reviewed publications advocate that, for a variety of equine allergic conditions including atopic dermatitis, respiratory allergies and insect bite hypersensitivity (IBH), **either intradermal skin testing (IDT) or serum IgE detection can be used to select allergens for immunotherapy**. [1,5,7,8,11-14] Furthermore, it has been shown repeatedly that the method used makes **no difference to the clinical response to ASIT;** both tests are equally effective.[5,13]

Client convenience and reduced expense
The advantages of serological testing over IDT were summarised at the last World Congress of Veterinary Dermatology as; "*convenience (can be done at the yard), no waiting periods (unlike reading IDT results at various points), no need for sedation and no requirement for clipping*".[15]

WHICH SEROLOGICAL TEST TO USE?

Antibody detection reagent used
Not all serological tests are equivalent. Nextmune Laboratories use an equine specific monoclonal antibody[16]. This has a high affinity and specificity for equine IgE with no cross reactivity with equine IgG. This is advantageous over tests which either use polyclonal antibodies (as they often lack specificity) or antibodies which are not species specific (e.g. human or canine antibodies). We at Nextmune Laboratories Ltd develop, manufacture and run these testing services from our UK laboratory, allowing for end-to-end control.

Native UK allergens on testing panel
Another important factor is the relevance of the allergens included on the testing panel. Nextmune Laboratories is a UK based company, manufacturing its own plates using UK relevant allergens. Correlating results appropriately with the clinical history is critical, so ensuring the right allergens are be tested for, therefore imperative.

Laboratory reputational and publication history
Nextmune Laboratories's team of leading research and development scientists are highly regarded within the dermatology field, having submitted clinical papers to and presented at successive World Congresses of Veterinary Dermatology since 2008. Our equine environmental test is supported by a peer-reviewed publication.[16] We work alongside leading figures and companies in veterinary dermatology.

REFERENCES:

1. Marsella, R. (2013). Equine allergy therapy: Update on the treatment of environmental, insect bite hypersensitivity, and food allergies. Vet Clin North Am Equine Pract; 29(3): 551-557.
2. Pirie, R.S., Couëtil, L.L., Robinson, N. *et al.* (2016). Equine asthma: An appropriate, translational and comprehendible terminology? *Equine Vet J*; 48: 403-405.
3. Hotchkiss, J.W., Reid, S.W. and Christley, R.M. (2007). A survey of horse owners in Great Britain regarding horses in their care. Part 2: Risk factors for recurrent airway obstruction. *Equine Veterinary Journal*; 39: 301-308.
4. Caig, J. (1973). A survey to establish the incidence of sweet itch in ponies in the United Kingdom. Vet Rec., 93: 444-6.
5. Radwanski, N.E., Morris, D.O., Boston, R.C., Cerundolo, R. & Lee, K.W. (2019). Longitudinal evaluation of immunological responses to allergen-specific immunotherapy in horses with IgE associated dermatological disease, a pilot study. *Vet Dermatol*; 30: 255–e78.
6. Yu, A.A. (2016). Equine Atopic Dermatitis – Management. In Proceedings of the 8th World Congress of Veterinary Dermatology, Bordeaux 2016; 367-374.
7. Loeffler, A., Herrick, D. Allen, S. & Littlewood, J.D. (2018). Long-term management of horses with atopic dermatitis in southeastern England: a retrospective questionnaire study of owners' perceptions. *Vet Dermatol*; 29: 526–e176.
8. White, S.D. (2016). Approach to Equine Pruritus. In Proceedings of the 8th World Congress of Veterinary Dermatology, Bordeaux 2016; 363-366.
9. Fadok, V.A. (2013). Update on equine allergies. *Vet Clin North Am Equine Pract*; 29(3): 541-550.
10. White, S.D. (2017). The pruritic (itchy) horse: how to approach and treat it. In: Proceedings of the 29th Annual Congress of the European Society and College of Veterinary Dermatology, Lausanne, 2017.
11. 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. *Journal of Equine Veterinary Science*; 75: 65e68.
12. Mueller, R.S., Janda, J., Jensen-Jarolim, E. *et al*. (2016). Allergens in veterinary medicine. *Allergy*; 71: 27-35. © 2021 Nextmune Laboratories Ltd
13. 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). *Vet Dermatol*; 23(1): 29-3.
14. Jensen-Jarolim, E., Einhorn, L., Herrmann, I. *et al*. (2015). Pollen allergies in humans and their dogs, cats and horses: differences and similarities. *Clinical and translational allergy*; 5: 15.
15. Mueller, R.S. (2016). Allergen testing and immunotherapy in the horse. In: Proceedings of the 8th World Congress of Veterinary Dermatology, Bordeaux 2016.
16. 16. 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. Vet Dermatol; Aug 28 [Epub ahead of print]