

INVESTIGATION OF ALLERGIC SKIN DISEASE IN THE HORSE

Allergies in horses are commonly encountered but given their prevalence are poorly understood, often difficult to diagnose, and frustrating to treat. Serum Allergy Testing (SAT) and Intradermal Testing (IDT) are commonly used to diagnose allergic dermatitis. SAT and IDT are of no value in horses with respiratory allergies or suspected food intolerance.

In human and veterinary medicine IDT remains the “gold-standard” for diagnosing allergic skin disease although SAT is popular because of its convenience. Many laboratories will test a single equine serum sample against a panel of common equine allergens. However, in one study of three commonly used equine SAT’s, all tests had poor sensitivity and poor positive predictive value when compared to IDT. The best of the 3 tests (the “Allercept” assay) had a sensitivity of only 37% and a positive predictive value of only 48.5%. The authors concluded that none of the 3 SAT’s evaluated should be used to screen for equine allergen hypersensitivity. There is no documented evidence of the reliability and reproducibility of equine SAT’s or that tissue-bound IgE in the skin correlates with circulating IgE levels. In people, SAT’s are known to be affected by anti- IgE antibodies (IgG), cross-reactive carbohydrates and IgE heterogeneity. In one study of horses with RAO levels of IgE and IgA in serum were not elevated despite significant elevations in IgE and IgA in bronchoalveolar lavage fluid².

Although IDT is accepted as the gold standard in dermatology it is far from being the perfect test. As with SAT false positive results are common and some will occur in most normal horses. A positive skin test reaction indicates that the patient produces allergen-specific IgE resulting in mast cell degranulation. This may indicate 1) clinical allergy or 2) that the animal has prior subclinical exposure to the allergen or 3) that the allergen is being tested at a concentration that produces an irritant (rather than allergic) reaction. Care in interpretation and experience in reading the tests is therefore important as is thorough history taking. Nevertheless, against a panel of 40–50 allergens, atopic horses will show a greater number of positive reactions than normal horses.

The crux of the matter has to be whether treatment measures put in place on the basis of diagnostic testing are effective. In the absence of any larger controlled studies, one study of 6 chronic cases reported clinical improvement in all cases following immunotherapy programmes based on IDT. Previous immunotherapy programmes in these horses based on SAT were contradictory and ineffective. Anecdotally, many of the 30 horses that have undergone hyposensitisation at the LEH have shown a significant improvement following treatment.

In conclusion, both SAT and IDT have drawbacks. SAT offers a cheap and convenient test but is highly insensitive, has a poor positive predictive value and all equine dermatological texts advise that it should not be used for screening allergic disease. IDT requires referral, sedation and clipping but can yield significantly more useful diagnostic information. Hence this firmly remains the recommended technique at The Liphook Equine Hospital. Table 1 lists the usual panel of intradermal allergens used at Liphook.

<u>Mites</u>	<u>Animal dander</u>	<u>Crop pollens</u>	<u>Fungi</u>
Flour/dust mite	Cat	Oats	<i>Alternaria alternata,</i>
Hay mite	Cattle	Maize	<i>Aspergillus niger,</i>
Meal mite	Dog	Rape	<i>Bipolaris sorokiniana</i>
		Wheat	<i>Cladosporium sphaerospermum,</i>
		Feathers	<i>Penicillium notatum</i>
<u>Grass pollens</u>	Human		
Bent grass	Mouse	<u>Tree/shrub pollens</u>	<u>Flies</u>
Couchgrass	Rat	Alder	Horse fly - <i>Tabanus</i>
Italian ryegrass	Sheep	Ash	House Fly - <i>Musca</i>
Meadow fescue		Beech	Midge - <i>Culicoides</i>
Orchard grass,	<u>Plants/flower pollens</u>	Elder	Mosquito - <i>Culicidae</i>
Perennial ryegrass	Daisy	Hawthorn	
Sweet vernal grass	Dandelion	Hazel	
Timothy grass	Dock	Horse chestnut	<u>Other</u>
	Heather	Oak	Cotton
	Nettle	Privet	Grain dust
	Plantain	Scotch Pine	Kapok
	Red clover	Silver Birch	
	Sheep sorrel	Sweet chestnut	

Table 1. Intradermal allergens used in the testing protocol at The Liphook Equine Hospital