Allergen chip identifies allergies in horses

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Credit: Medical University of Vienna

An allergen microchip developed at the Medical University of Vienna can be used to identify allergic sensitisation in horses. This is the main finding of an international study recently published in leading journal *Allergy*. "Our best friends are more like us than we perhaps thought – even in terms of their immune system," explains lead author of the

study, Erika Jensen-Jarolim, who has dual affiliation, both to MedUni Vienna's Institute of Pathophysiology and Allergy Research and to the inter-university Messerli Research Institute of Vienna University of Veterinary Medicine, the Medical University of Vienna and the University of Vienna.

The study showed that horses develop an antibody reaction by producing immunoglobulin E – similar to the IgE profile in humans. IgE is an antibody primarily intended to defend against parasites but it is also responsible for allergies and is an important biomarker for the early detection of allergies. Even in the case of horses, a single drop of blood is enough to test for allergies using the allergen microchip.

The international study consortium headed up by Jensen-Jarolim, also comprising researchers from Germany, Switzerland and Japan, was able to identify a strong IgE immune system reaction, particularly to buckwheat but also to alder pollen and Bermuda grass (also called "dogtooth grass" in German), which is becoming increasingly widespread in Austria. "Buckwheat is often used as a high-protein pseudo-cereal in horse treats and horse muesli," explains Jensen-Jarolim. "The reaction to pollen from flat-leaved Bermuda grass, in particular, is explained by the fact that, when horses are grazing, they have their noses right down to the ground. In collaboration with Uwe Berger and his team from MedUni Vienna's Pollen Monitoring Service, we now intend to investigate the flora found in paddocks."

This first of all requires a clinical investigation to ascertain whether and to what extent these allergens are linked to the allergic reactions commonly found in horses, such as coughs, colic and skin problems. "However, just like the IgE test in human allergy sufferers, our results are, at any rate, a strong indication of the direction to take in further diagnostic investigations," says Jensen-Jarolim. The allergen chip is already being successfully used for diagnosing allergies in humans and is

now available for horses as well. Similar tests are currently being developed for dogs too – these study findings should be available in the near future.

Affected horses could then be put on an elimination diet that totally avoids any suspected allergens to see whether their symptoms improve.

More information: L. Einhorn et al. Molecular allergen profiling in horses by microarray reveals Fag e 2 from buckwheat as a frequent sensitizer, *Allergy* (2018). DOI: 10.1111/all.13417

Provided by Medical University of Vienna