

For reprint orders, please contact reprints@future-drugs.com

Specific immunotherapy safe and effective in childhood seasonal asthma

A recent study in the *Journal of Allergy and Clinical Immunology* had found that specific immunotherapy is an effective and safe treatment for seasonal allergic asthma in children.

The randomized, placebo controlled trial studied the effects of specific immunotherapy in 35 children aged 3–16 with grass-pollen induced asthma for two pollen seasons. The immunotherapy consisted of Alutard SQ grass pollen (*Phleum pratense*) administered in increasing doses from 10 to 100,000 SQ-U. The doses were delivered over 8 weeks, during a period of several weeks. The subjects were observed for 30 min after each injection.

The placebo injections contained histamine in order to mimic the skin reaction of active treatment and maintain blinding.

The primary outcome measure was the asthma symptom–medication score during the second pollen season. Degree of airway inflammation and conjunctival, bronchial and cutaneous reactivity were also recorded.

Specific immunotherapy led to a significant reduction in the asthma symptom–medication score, compared with placebo, and also reduced all three types of allergen reactivity. Exhaled nitric oxide and sputum eosinophil tests demonstrated no difference between the two groups. This is despite the fact that subjects in the specific immunotherapy group had reduced their steroid dose to half that of the placebo group. The authors therefore suggest that specific immunotherapy may have an anti-inflammatory effect.

The treatment was well tolerated with no serious side effects or treatment withdrawals due to adverse events.

Graham Roberts from Southampton University Hospital NHS trust, who led the study, stressed the importance of patient selection in the success of specific immunotherapy. He stated, “Good candidates have summer asthma and often hay fever. They should have a positive skin prick test to the grass pollen allergy and positive serum specific immunoglobulin E to it.” The children should not have unstable asthma during the winter when treatment tapering occurs, or any significant asthma symptoms due to other allergens.

Chinese herbal formula prevents peanut anaphylaxis in allergic mice

Findings were presented at the annual meeting of the American Academy of Asthma, Allergy and Immunology showing that treatment with the Chinese herbal formula FAHF-2 blocks peanut-induced anaphylaxis for up to 6 months in peanut-allergic mice. Full protection is restored following a second course of FAHF-2.

Kamal D Srivastava, who led the study at Mount Sinai School of Medicine in New York, said, “this is a significant finding in terms of the duration of protection with a single course of treatment that can be taken orally, making it an effective and convenient treatment that can be administered at home.”

After 7 weeks of treatment with FAHF-2, peanut-sensitized mice were protected against peanut-induced anaphylaxis following oral challenges administered up to week 34. Modest declines in

protection were seen at weeks 40 and 50, with one in ten mice reacting at week 40 and three in ten at week 50.

Retreatment with FAHF-2 restored full protection, with no mice reacting to oral peanut challenge at week 66.

The mechanisms underlying the protective effects are yet to be discovered. Srivastava reports preliminary findings suggesting that the formula “may be targeting multiple cell types such as mast cells and T cells. It seems to reduce mast cell degranulation, which plays a central role in anaphylaxis”. FAHF-2 also appears to stimulate T cells to produce interferon- γ .

The team is currently working to identify the bioactive compounds in the formula. They plan to optimize the treatment course for human clinical trials and plan to submit a proposal to the US FDA in the near future.

Infectious mononucleosis doubles the risk of developing multiple sclerosis

The results of a meta-analysis published in the *Annals of Neurology* suggest that infection with the Epstein–Barr virus (EBV), which manifests as infectious mononucleosis among adolescents and young adults, more than doubles the risk of developing multiple sclerosis (MS).

Recently, researchers have begun to consider EBV in the causes of MS owing to similarities in the epidemiology of MS and mononucleosis. The authors of the analysis state, “Both infectious mononucleosis and MS occur in young adults, both follow a latitude gradient and both are rare in populations where infections occur at an early age, suggesting that late infection with EBV, evidenced by occurrence of infectious mononucleosis, is an important causal factor in MS.”

However, studies that have examined the relationship between MS and infectious mononucleosis have provided inconsistent results.

This meta-analysis combined 14 studies conducted in the US, Australia and Europe. It found that the combined relative risk of MS after infectious mono-nucleosis was 2.3.

Evan Thacker, the lead author of the report has said, "The potential implication is that some cases of multiple sclerosis could probably be averted through the prevention of infectious mono ... One way to accomplish this might be to develop a safe and effective vaccine against Epstein-Barr virus."

Acute infections increase risk of deep-vein thrombosis and pulmonary embolisms

A report in *The Lancet* demonstrated that acute infections are associated with a higher risk of developing pulmonary embolism and deep-vein thrombosis (DVT).

Although previous studies have linked acute infections with increased risk of arterial cardiovascular events, it had been unclear whether this was also true of thromboembolic events.

The group, led by Liam Smeeth from the London School of Hygiene and Tropical Medicine, analyzed data from 3755 pulmonary embolism patients and 7278 DVT patients registered in a UK general practice database from 1987 to 2004.

The findings indicate that in the two weeks following a urinary tract infection, the risk of both pulmonary embolism and DVT increased 2.1-fold. The risks remained above baseline for over 1 year.

The authors also note that respiratory tract infection was associated with an elevated risk of DVT but that the effect on pulmonary embolism was less clear.

The report concludes, "Our finding that two infectious processes in different organ systems are associated with a substantial, reversible increase in the risk of venous thromboembolism suggests that acute infections may have a causal role in triggering events."

The researchers now plan to focus on identifying the mechanisms which underlie this risk.

H5N1 vaccine developed using two virus proteins

Researchers in the USA have demonstrated that it is possible to generate immunity against the H5N1 strain of influenza using a vaccine that contains only two of the virus's proteins.

The group, led by John J Treanor from the University of Rochester Medical Center in New York, used hemagglutinin and neuraminidase derived from the avian influenza virus that killed a Vietnamese boy in 2004. Additional genes were derived from a laboratory strain of influenza commonly used for seasonal influenza vaccines.

451 healthy adults were given vaccinations 28 days apart, using vaccines with hemagglutinin antigen levels of 7.5–90 g or placebo.

The study endpoint was only reached by the groups which received the highest

dose of the vaccine. 54% of these subjects had a microneutralization titer of 1:40 or above, while 58% had a hemagglutination-inhibition titer of 1:40 or higher. The researchers theorize that a 1:40 antibody titer would protect against exposure to avian influenza.

Treanor has suggested a number of reasons for the low levels of antibodies produced. "It might be because this is a very highly purified protein administered without any adjuvant to an immunologically naive person, someone who has no previous priming ... It's also possible there's something special about the H5 antigen that doesn't interact well with the immune system." Alternatively, the low response may be seen because the tests for measuring the immune response are not very sensitive, so some immune responses are occurring but are not being detected.

Treanor also pointed out that until human infection occurs, it will be impossible to tell how low the antibody titers can be while still offering protection. It has been suggested that adjuvants can be used to amplify the immune response if necessary.

Anthony Fauci, Director of the National Institute of Allergy and Infectious Diseases, has suggested that researchers could "go back and give an additional booster to see what percentage of subjects can attain a cutoff of 1:40".

He also raised the point that it is likely that memory B cells will develop if exposed to the H5 antigen, which will give the host the capacity for a robust secondary response.