

Study reveals using synthetic peptides could be a better solution for grass allergy sufferers

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A new approach to treating grass allergies offers potential as a shorter and more effective alternative to traditional allergy shots, according to a recent study led by Queen's researcher Dr. Anne Ellis (Medicine, Biomedical and Molecular Sciences).

"For many Canadians, the misery of grass allergy season can be lessened through allergen immunotherapy, also known as [allergy shots](#)," says Dr. Ellis. "But this well-known treatment not only involves the discomfort of weekly needles for four to six months, followed by monthly injections for up to five years after, it also carries a not insignificant risk of severe reactions, including anaphylaxis. This new approach could change all of that."

One of the largest ever conducted on this allergen, the Phase II clinical trial looked at the effectiveness and safety of a grass peptide-based immunotherapy, compared to a placebo, in 226 study participants.

This revolutionary study is the first-ever completed Phase II study using synthetic peptides to treat grass allergies. Unlike traditional grass allergy injections – which use all of the proteins from grass – the peptide therapy works through a different mechanism, using tiny bits of specific proteins to target the most important immune cells.

"It's a new way of giving immunotherapy that bypasses the indirect route of traditional treatment and goes right to the most important effector cells" says Dr. Ellis, who also works as a clinician scientist at the Kingston General Hospital Research Institute. "The theory is that the proteins used in this kind of therapy are so small, they avoid anaphylaxis."

Participants were treated with either the peptides

or a placebo four months before grass season. After just eight injections – given every two weeks over the course of 14 weeks in total – they were exposed to grass pollen in the Environmental Exposure Unit (EEU) at Kingston General Hospital. The EEU is a state-of-the-art controlled environmental exposure facility that enables up to 140 participants to be tested at the same time.

Dr. Ellis' study revealed participants who received the peptide treatment showed a significant reduction in allergy symptoms, such as sneezing, nasal congestion, and runny nose upon exposure to [grass](#) pollen, while avoiding serious reactions such as anaphylaxis.

The study also showed that this treatment could be delivered over a shorter period of time – one dose every two weeks over 14 weeks, compared to the nearly year-round frequency of traditional allergy shots. Interestingly, a higher dose of the peptide treatment, delivered over four-week intervals, was no more effective than the lower dose given biweekly.

"We saw the same thing in studies using [synthetic peptides](#) for allergies to cats and dust mites," says Dr. Ellis. "It's clear that immunotherapy using these peptides is different – it causes a bit of a rethink about how the immune system works."

More information: Anne K. Ellis et al. Treatment with grass allergen peptides improves symptoms of grass pollen-induced allergic rhinoconjunctivitis, *Journal of Allergy and Clinical Immunology* (2017). [DOI: 10.1016/j.jaci.2016.11.043](https://doi.org/10.1016/j.jaci.2016.11.043)

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