

Peripheral blood analysis shows benefit of peptide immunotherapy for cat allergy

HAMILTON, ON (8 January 2021)

A pilot study has shown that an experimental vaccine for cat allergy can reduce the systemic immune response and symptoms of allergic rhinitis in individuals allergic to cats, including nasal congestion, sneezing, nasal itching and runny nose.

The vaccine, called Cat-PAD (Adiga Life Sciences Ltd.), uses peptide immunotherapy to target the immune system and train it not to overreact to the cat allergen Fel d1 – a protein excreted in a cat's skin, saliva, and urine.

Published in the journal *Allergy*, [the study](#) involved AllerGen and PROOF Centre of Excellence researchers from The University of British Columbia, McMaster University and Queen's University.

Dr. Scott Tebbutt, an AllerGen investigator, Professor in the Department of Medicine at The University of British Columbia, and CEO and Chief Scientific Officer at the PROOF Centre of Excellence, led the research. Dr. Young Woong Kim (The University of British Columbia), PhD, and a former AllerGen and PROOF Centre trainee is the study's first author. AllerGen investigators Drs Mark Larché and Helen Neighbour (McMaster University), and Dr. Anne Ellis (Queen's University) are study co-authors and clinical leads.

"Our participants received four injections of the immunotherapy vaccine over a three-month period and we measured their clinical response to the therapy. We found that they had significant improvement in their nasal symptom scores and changes in the frequency of immune cells in their peripheral blood," says Dr. Tebbutt.

Participants were individuals with cat allergy who had at least eight hours per week of exposure to a cat in their daily lives throughout the study. At each of three visits (screening, pre-treatment, and post-treatment), participants were exposed to cat allergen by a nasal allergen challenge (NAC) designed to provoke allergy symptoms. The NAC model for allergic rhinitis was optimized and validated by AllerGen's Allergic Rhinitis Clinical Investigator Collaborative (AR-CIC), led by Drs Ellis and Neighbour.

After exposure, researchers assessed the participants' total nasal symptom scores (TNSS) and collected peripheral blood samples to look for immunological changes and measure the neutrophil-to-lymphocyte ratio – a subclinical marker of inflammation that indicates an allergic response.

"We found a strong correlation between the change in the number of lymphocytes and the reduction of TNSS following immunotherapy treatment," says Dr. Kim. "Also, using a gene signature analysis we have previously described, we identified five immune genes associated with this relationship that we believe are associated with the mechanisms of action of Cat-PAD. We look forward to studying these gene candidates further."

The findings have clinical implications as well. Both in the current study and in a [2018 paper](#), Drs Ellis and Neighbour validated the reliability of the NAC to induce AR symptoms, enabling future research on the potential efficacy of novel therapeutics.

Cat-PAD offers advantages over existing immunotherapies as it requires fewer and less frequent injections and involves a significantly shorter course of therapy, according to Dr. Larché, who co-founded Adiga Life Sciences Inc., a joint venture between McMaster University and Adiga Life Sciences Ltd., a UK-based biotechnology company.

About AllerGen Inc. (Allergy, Genes and Environment Network)

[AllerGen Inc.](#) is a not-for-profit national research network and former federally funded Networks of Centres of Excellence (NCE) dedicated to improving the quality of life of people suffering from allergic and related immune diseases. Funded by the Government of Canada from 2005 to 2019, AllerGen is hosted at McMaster University in Hamilton, ON.

About PROOF Centre of Excellence

The PROOF (Prevention of Organ Failure) Centre is a not-for-profit organization that develops biomarker tests to better predict, diagnose, manage and treat a range of diseases. Initially established by the Networks of Centres of Excellence Secretariat under the Centre of Excellence for Commercialization and Research (NCE CECR) Program, it is co-hosted by The [University of British Columbia](#) and [Providence Health Care](#) in Vancouver, BC.

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