

Gut worms may protect against house-dust mite allergy

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(PhysOrg.com) -- A study conducted in Vietnam has added further weight to the view that parasitic gut worms, such as hookworm, could help in the prevention and treatment of asthma and other allergies.

Led by Dr Carsten Flohr, a Clinical Scientist from The University of Nottingham, and Dr Luc Nguyen Tuyen from the Khanh Hoa Provincial Health Service in central Vietnam, the study is the largest double-blind placebo controlled clinical trial to date looking at the potential links between hookworm and other gut worm infections and allergic conditions such as asthma and eczema.

Thanks to improved hygiene practices parasitic worms have been mostly eradicated among human populations living in developed countries. However, experts believe that over millions of years of co-evolution worms have found methods to dampen down host immune responses to prolong their own survival inside humans. This relationship seems to have become so intertwined that without gut worms or other parasites, our immune system can become unbalanced, which in turn could contribute to the development of asthma and other allergies. At the same time, it is important to remember that gut parasites can cause severe disease and are a major cause of iron-deficiency anaemia in developing countries.

Dr Flohr's study was conducted in a rural area of central Vietnam where two out of three children have hookworm and other gut parasite infections and where allergies are extremely rare. More than 1,500

schoolchildren aged 6-17 took part.

The team investigated whether repeated tablet treatments to clear the body of gut worms made it more likely for children to develop allergic conditions. While the treatment did not demonstrate an effect on asthma or eczema, the treated children had a significantly increased risk of having a positive allergy skin test to house-dust mites and cockroach. This suggests that gut worms have the potential to tone down human immune responses and so further research is now needed to identify precisely how gut worm infection can prevent allergic sensitisation.

Dr Carsten Flohr of The University of Nottingham adds: “The next step is to understand exactly how and when gut parasites programme the human immune system in a way that protects against allergic sensitisation, and for such studies, follow-up from birth will be essential.”

As up to 80 per cent of people with asthma also have allergies to house-dust mites and other environmental allergens, additional research in this area could aid the creation of new treatments that work in the same way as gut parasites, by dampening down or rebalancing the immune system so that the body does not respond to allergens and trigger asthma attacks.

Dr Elaine Vickers, Research Relations Manager at Asthma UK, says: “Asthma affects more than five million people in the UK, with a person being admitted to hospital every seven minutes following an asthma attack. The prospects of further studies in this area are therefore very exciting as we could see groundbreaking treatments for asthma and other allergies developed as a result. It's now vital that we see more funding being invested in this important area of research, so that we can increase our understanding of the link between gut parasites and the development of allergies from birth.”

Co-applicants on the [Asthma](#) UK research grant that funded the work were Professors John Britton, David Pritchard, and Hywel Williams. The Nottingham team collaborated with researchers from the Wellcome Trust Major Overseas Programme at the Oxford University Clinical Research Unit Hospital for Tropical Diseases in Ho Chi Minh City, where Dr Flohr was based for his work. Additional funding was received through the Bastow Award from the Special Trustees for Nottingham University Hospitals. Dr Flohr's salary was provided by University College, University of Oxford, for two years and by the Wellcome Trust UK for a further nine months.

Provided by University of Nottingham

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