Hayfever hope

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With the peak grass pollen season approaching, scientists can reveal that a daily dose of probiotic can change the immune status of people with hay fever.

In the first human study of its kind, scientists at the Institute of Food Research found that probiotic bacteria in a daily drink can modify the immune system's response to grass pollen, a common cause of seasonal hay fever.

But they are not recommending that sufferers rush to the supermarket shelves just yet. The changes found may not have an immediate effect on symptoms.

"This was a pilot study based on small numbers of patients, but we were fascinated to discover a response", says research leader Professor Claudio Nicoletti. "The probiotic significantly reduced the production of molecules associated with allergy."

Hayfever is an allergic reaction to pollen or fungal spores, most commonly grass pollen. The immune system mistakes the spores for harmful invaders and produces excessive amounts of the antibody IgE to bind to them and fight them off.

IgE stimulates the release of histamine to flush out the spores, and this irritates the airways making them swell and producing the symptoms of hayfever.

In this study, volunteers with a history of seasonal hay fever drank a daily milk drink with or without live bacteria over 5 months. The study was double-blinded and placebo controlled, so neither the volunteers nor the scientists knew who had been assigned the probiotic drinks. The probiotic drinks contained Lactobacillus casei, a bacterial species that has been widely studied for its health promoting properties.

Blood samples were taken before the grass pollen season, then again when it was at its peak (June), and 4 weeks after the end of season. There were no significant differences in levels of IgE in the blood between the two groups at the start of the study, but IgE levels were lower in the probiotic group both at the peak season and afterwards.

At the same times, levels of the antibody IgG were higher, a type of antibody that in contrast to IgE is thought to play a protective role against allergic reactions.

"The probiotic strain we tested changed the way the body's immune cells respond to grass pollen, restoring a more balanced immune response", says Dr Kamal Ivory, a senior member of the group.

The changes observed may also reduce the severity of symptoms, but clinical symptoms were not measured in this study. That is one aim of further research.

"These are really interesting results", says Dr Linda Thomas, head of science at Yakult UK, who provided the drinks and some of the funding. "We are delighted that independent scientists found evidence of this biological activity. The project was part of ongoing research into the benefits of our probiotic strain. The Institute of Food Research is well positioned to do this kind of fundamental research, as it is unique in having the right combination of expertise in microbiology, immunology, flow cytometry and human nutrition research."

Professor Nicoletti's group intend to perform a similar study in the near future to see if the immunological changes translate into a real reduction in the clinical symptoms of hayfever. They would also like to examine the mechanisms involved.

Source: Norwich BioScience Institutes