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February 2012 issue 21

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Allergy-blocking could bring relief to millions

An end to allergies?

New drug could block reactions to anything from pollen to penicillin

Pollen, dust and even certain kinds of foods, to name but a few, are all allergens, capable of inducing anything from an irritating rash to a life-threatening reaction in the susceptible. Current treatments for allergies are often clumsy, tackling the symptoms rather than the cause and occasionally leaving the patient's immune system compromised.

Now biochemists in the US have created a drug designed to halt an allergy in its tracks, preventing the allergen from confusing the human immune system and causing a reaction.

When an allergen such as pollen enters the body, the

immune system recognises it as an invader and produces antibodies in response. These antibodies bind to cells that make up a different part of the immune system, called mast cells. If the allergen enters the body again, it binds with the

HBL steps between the allergen and the immune system, preventing a response

antibodies that are already linked to the mast cells.

"The mast cells release molecules they think will destroy a pathogen – but there is no pathogen," says Basar Bilgiçer of the University of Notre Dame, Indiana, who is

involved in the research. "The molecules end up hitting our own tissue. This results in all the symptoms we associate with an allergy."

The solution developed by the biochemists at the University of Notre Dame

and at Harvard University is a substance they've called a heterobivalent ligand (HBL), which steps between the allergen and the immune system, preventing a response. It binds to the antibodies, thus preventing the allergen from

doing so, meaning the body does not produce the reactive symptoms experienced by allergy-sufferers.

Human bodies contain billions of antibodies, each capable of responding to a specific invader. But HBL binds only to the antibodies produced in response to the allergen, so the rest of the immune system is unaffected.

The scientists carried out their first tests using dinitrophenol – a chemical that has been used as a weight loss drug – as the allergen to be blocked. "The next step would be to do the same thing with penicillin, as it's quite common to have an allergic reaction to it," says Bilgiçer.

Each allergen would need its own HBL to combat it, so it could take some time to develop treatments for several different allergies. ■