

Promising new research from Northwestern University is reporting progress in the development of an anaphylaxis-preventing pill. The drug, initially designed as an alternative to chemotherapy for some types of cancer, could hypothetically be taken before meals to prevent serious allergic reactions.

TK inhibitors are relatively new drugs , originally designed to block a particular cellular protein known to play a role in the development of several kinds of cancers, including chronic lymphocytic leukemia and mantle cell lymphoma. Ibrutinib was the first of these drugs to gain FDA approval in 2013.

A few years ago some researchers from Northwestern University began investigating the potential for BTK inhibitors to prevent allergic reactions. As this novel cancer drug shut down a cellular process also known to be involved in anaphylaxis, it seemed plausible it could also block acute allergic responses.

“I’ve heard parents say, ‘It would be nice to have my child take something while we’re on vacation in case they accidentally eat the wrong food,’ and we think these drugs could one day serve that purpose,” says senior author on the new study, Bruce Bochner. Early research on cancer patients

taking the drug did reveal impressive reductions in allergic responses. Some patients with existing allergies saw skin test reactivity to their particular allergen dropping by up to 90 percent within a week of starting BTK inhibitor treatment.

Another small study , this time in healthy subjects with allergies, suggested the drug effectively prevented systemic anaphylaxis upon exposure to a known allergen. Again, this was a small study, but it was incredibly promising since there is no known drug that can prevent anaphylactic shock.

The new research took the team back into the lab to conduct robust animal tests with the goal of getting a better picture of the mechanism through which the drug prevents anaphylaxis. The scientists designed a new mouse model, with organs containing implanted human cells.

The resulting study, published in *The Journal of Clinical Investigation* , offers a detailed picture into how just two oral doses of BTK inhibitors both prevented anaphylaxis in the face of moderate allergen exposure, and significantly protected against death when severe anaphylaxis was induced.

Plenty more work is necessary before some kind of allergy-prevention pill becomes a reality. BTK inhibitors, for example, might be already FDA approved for some particular uses but they have yet to be approved for any purposes in children. These drugs are also prohibitively expensive at the moment.

But, as Bochner notes, the potential uses for an anaphylaxis-preventing pill could be life-changing to many people. Not just as pre-meal pill that is popped to help prevent acute allergic reactions, but also as a way to offer antibiotic treatments to people previously unable to take these life-saving medications.

“This pill could quite literally be life-changing and life-saving,” say Bochner. “Imagine being able to take medication proactively to prevent a serious allergic reaction.”

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Source: Northwestern University