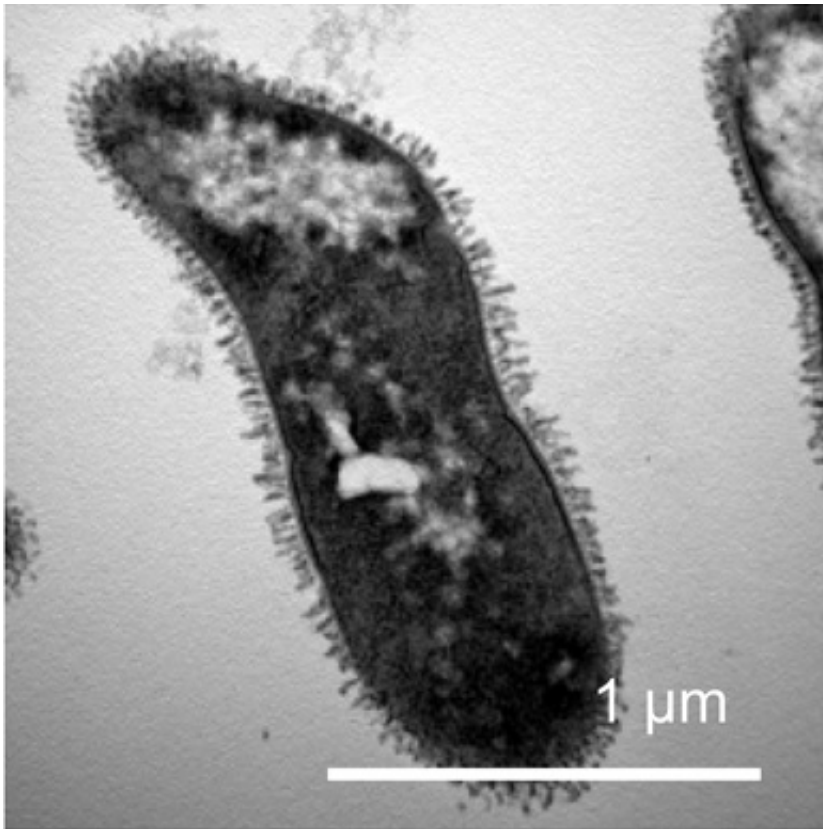


Protein from bacteria alleviates food allergy symptoms

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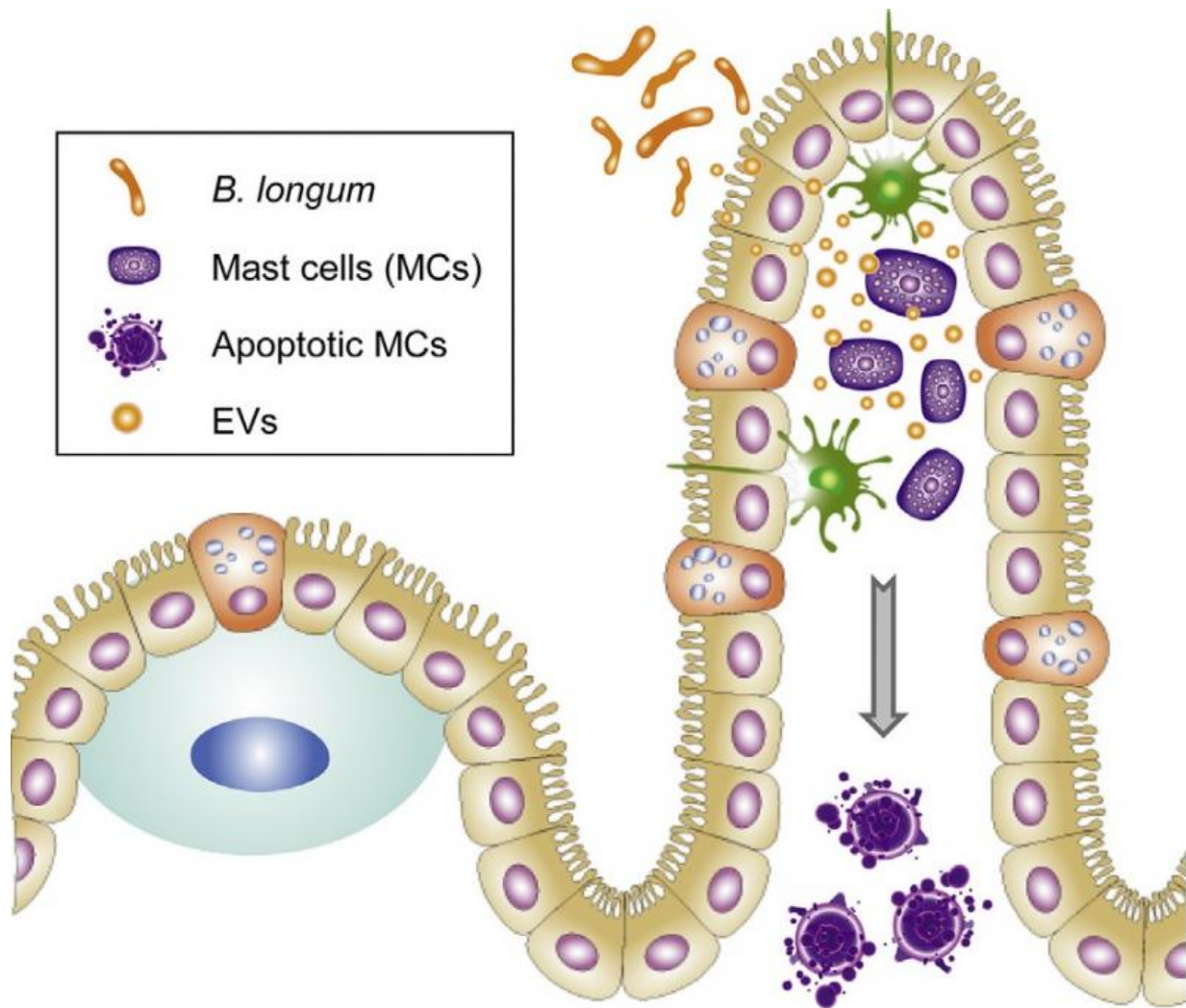


Lactobacillus might sound familiar when the topic of probiotics comes up, but they are only one of many types of bacteria that have proven health benefits. In a new study by the Academy for Immunology and Microbiology within the Institute for Basic Science (IBS) and the

National Institute of Animal Science research project of Rural Development Administration, researchers have shown that the introduction of the probiotic *Bifidobacterium longum* KACC 91563 has the ability to reduce the effects of food allergies. In the US, the number of children with food allergies increased by 18% between 1997 and 2007; during the same time allergy-related hospital visits tripled.

Though some probiotics have proven to be very effective for reducing food allergies, this is not the case for all probiotic [bacteria](#). The IBS team tested two strains of bacteria, *Bifidobacterium longum* KACC 91563 and *Enterococcus faecalis* KACC 91532, on mice which were later exposed to food allergens to see what effect they had on immune system response. Mice with an *E. faecalis* KACC 91532 intestinal population did not show any change in allergic response, however in mice with *B. longum* KACC 91563 intestinal populations there was a significant suppression and delay in the occurrence of diarrhea.

The [probiotics](#) work by releasing extracellular vesicles (EVs), tiny spherical packets that contain protein and DNA which are released into the small and large intestines. The EVs deliver this material from the bacteria which influence the immune system. In the case of *B. longum* KACC 91563, the EVs contain family 5 extracellular solute-binding protein (ESBP). In the intestines, the ESBP interacts with mast cells which are responsible for allergic response, and causes them to kill themselves, thus neutralizing their ability to induce allergy.



The mice were given a common test allergen, albumin, the protein found in egg whites, mixed with alum to induce food allergy responses. The team looked for signs of intestinal distress, in this case diarrhea, as an indicator of an allergic response. They found that the dose was an important factor, as less than 5×10^9 colony forming units (cfu) of bacteria per mouse per day were not enough to prevent allergic response from occurring.

While the number of food allergies cases continues to grow, few treatment options exist. Dr. Yang stressed, "Our study is the first to discover the probiotic strain's mechanism of controlling food allergies without affecting regulatory T cells" and added, "since mast cells are the root cause of all allergic reactions, recombinant ESBP protein might be used therapeutic treatment of other allergic diseases as well as food allergy". There are other possible applications for ESBP including in skin cream to treat eczema. This protein treatment looks like a significant step in mitigating an overactive immune response which will go a long way in combating allergies.

Provided by Institute for Basic Science

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