

# ALPHA-GAL ALLERGY: MEAT ALLERGY CAUSED BY LONE STAR TICK

## WHAT CAUSES THE ALLERGY TO MEAT?

A blood group carbohydrate (sugar) called galactose- $\alpha$ -1, 3 galactose (“a-gal”) is present in all non-primate mammals. The allergy develops in response to a carbohydrate allergen, as opposed to most other food allergies, which are in response to a protein. Reaction is delayed by 3 to 6 hours after ingestion of meat (usually with a high fat content). Gelatin consumption (derived from beef or pork) may also cause allergic symptoms. Patients who develop the meat allergy have previously been able to eat meat with no problem. It is not yet known what predisposes some patients to develop this allergy.



## HISTORY:

Researchers at the University of Virginia have been studying patients with allergic reactions to meat. In 2011, they were able to demonstrate that patients with allergic reactions to meat had high levels of both IgE antibodies to a-gal and IgE antibodies to proteins derived from the lone star tick. The lone star tick (“*Amblyomma americanum*”) is a tick widely distributed throughout the southeastern and eastern Atlantic coast of the United States as far north as Maine. It transmits ehrlichia, tularemia, Rocky Mountain Spotted Fever, and STARI. The tick is aggressive and will actually seek out humans to bite, with the nymph and the adult females being the most aggressive transmitters of disease. The adult female is distinguished by a white dot (“lone star”) on her back. The saliva from this tick can be irritating, but redness and discomfort at a bite site does not necessarily indicate infection, nor does it necessarily indicate acquisition of a-gal allergy.

## SYMPTOMS:

Patients will often awaken in the middle of the night (3 to 6 hours after eating meat) with severe itching, redness and hives over their entire body. Patients with more severe episodes experience symptoms of anaphylaxis, which is a multi-system allergic reaction that in severe cases can lead to death. Symptoms of anaphylaxis include hives or allergic swelling, abdominal cramping, vomiting, diarrhea, wheezing, shortness of breath, and loss of consciousness.

## TREATMENT:

If diagnosis of a meat allergy is suspected there is a test that can identify a-gal specific IgE in a patient’s blood sample. Patients who may have been exposed to tick bites and develop allergic symptoms such as those described above should seek consultation with an experienced allergist.



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