

Check your understanding



1 Why do some people experience anaphylaxis from eating food?

A. Their immune system reacts as if it needs to protect the person from the food. This causes the immune system to produce high levels of IgE. The IgE causes the symptoms of anaphylaxis.

2 What was the function of the mRNA in the nanoparticle developed by the researchers?

A. The mRNA told the body to make T-cells. The T-cells reduce the amount of IgE, which causes the reaction to occur.

3 Why did the researchers expose a group of untreated mice to peanut extract?

Answer The untreated group of mice were the control group. They allowed the researchers to observe how the mice reacted to the peanut extract without treatment. Then they could compare their reaction to the mice that received treatment to determine if the treatment caused fewer symptoms.

4 Brainstorm a list of other things (besides food) that can cause allergic reactions.

Answer Answers may vary. Sample answers include:

- animals (cats, dogs, and bunnies)
- insect bites and stings (mosquitoes and bees)
- pollen
- dust
- mold
- medications
- latex

5 With a partner, design a meal that you might share with friends and family. Identify which foods in the meal might be a concern for a person with food allergies. Brainstorm alternative foods that you could serve to prevent an allergic reaction.

Answer Answers may vary. A sample meal could include chicken, pasta, and broccoli. The pasta could be a concern for someone with a wheat/gluten allergy. The pasta could be replaced with rice.

6 Many countries use food labels to tell people if a product contains an allergen or if it was produced in a place that contained an allergen. Do you think that food labels are an effective way to prevent anaphylaxis? Explain your answer.

Answer

Answers should include a claim about the effectiveness of food labels and an explanation for the claim.
Sample answer:

Yes, food labels are an effective way to prevent anaphylaxis. When people buy food, they can check the labels to make sure that the food doesn't contain anything that they are allergic to. This can reduce exposure, making it less likely that the person will experience anaphylaxis.

This [map of food labeling worldwide](#) is a great additional resource to share with students.

How did the mRNA-lipid nanoparticles affect IgE levels?

Answer

The nanoparticles decreased the amount of IgE. The total amount of IgE was lowest when the nanoparticles had decorations.