

What is in a vaccine: vaccine ingredients and safety

Before a vaccine is approved for use in the United States, the vaccine is tested extensively in clinical trials. The results from these clinical trials help determine if the vaccine is safe and effective.

The U.S. Food and Drug Administration (FDA) looks at the results from these clinical trials before determining whether the vaccine can be approved for use in the United States.

Vaccines contain only the ingredients they need to be safe and effective.

There are many different ingredients in vaccines. Each ingredient serves a specific purpose.

- Some ingredients may provide immunity (which is protection) against a disease.
- Some ingredients may help keep the vaccine safe and long lasting.
- Some ingredients may be included because they are used when producing the vaccine.

Let's go over these three types of ingredients in more detail.

The first type of ingredient we will talk about are ingredients that help a person's immune system respond to and build immunity against a specific disease.

Examples of this kind of ingredient are antigens, which are very small amounts of weak or dead germs that can cause diseases. Antigens help your immune system learn how to fight off infections faster and more effectively.

Another example of a vaccine ingredient that helps a person build immunity are adjuvants. Adjuvants, which are in some vaccines, are substances that help your immune system respond more strongly to a vaccine. This means that you may have increased immunity against the disease.

The second type of ingredient we will talk about are ingredients that help keep vaccines safe and long lasting.

These ingredients help make sure that the vaccine continues to be safe and work like it's supposed to work. They also help make sure that germs and bacteria don't get into the vaccine.

An example of this type of ingredient is a preservative, which protects the vaccine from outside bacteria or fungus.

Preservatives are usually only used in vaccines that have more than one vaccine dose in each vial or container. Preservatives are used in these vaccines because each time an individual dose of the vaccine is taken from the vial, it's possible for harmful germs to get inside the vial.

Most vaccines are available in single-dose vials and do not have preservatives in them.

Another example of this type of ingredient are stabilizers, like sugar or gelatin. These ingredients help the active ingredients in vaccines continue to work while the vaccine is made, stored, and moved around.

One example of how stabilizers work is that they keep the active ingredients in vaccines from changing if there is a shift in temperature in the area where the vaccine is being stored.

The third type of ingredient we will talk about are ingredients that are used during the production of vaccines.

Sometimes ingredients that are needed to produce a vaccine are no longer needed for the vaccine to work when it is given to a person.

These ingredients are taken out of the vaccine after it is produced so only very small amounts are left in the vaccine. These small amounts of ingredients that remain in the vaccine aren't harmful to people.

Examples of ingredients that are used during the production of vaccines include:

- Cell culture material, which helps grow the vaccine antigens
- Inactivating ingredients, which weaken or kill viruses, bacteria, or toxins in the vaccine
- Antibiotics, which help keep outside germs and bacteria from growing in the vaccine

All of these ingredients are used to make vaccines. All vaccines go through a lot of testing before the FDA approves them for use in the United States. You can feel confident that any vaccine you receive is safe and effective.

Let's review what we just discussed and go over some of the key points:

- Vaccines contain only the ingredients they need to be safe and effective.
- Each ingredient in a vaccine serves a specific purpose.
- Ingredients in vaccines:
 - Provide immunity against a disease
 - Keep a vaccine safe and long lasting
 - Are tested before they are used so the vaccine is safe and effective