



Childhood vaccines: What is in the vaccines and why

Immunization has saved more lives in Canada in the last 50 years than any other health measure.

What is in childhood vaccines?

Vaccines are made with ingredients that make them safe and effective to protect your child from disease.

Each vaccine contains a small amount of the disease germ (virus or bacteria) or parts of the germ. Examples are the measles virus, pertussis (whooping cough) bacteria, and tetanus toxoid. Vaccines do not cause disease because the germs are either dead or weakened and the toxoids are inactive. Vaccines help your child's immune system build protection against disease.

Other ingredients in vaccines help keep them stable and prevent contamination of multi-dose vials by bacteria and fungi. Some vaccines have ingredients to boost the immune response to the vaccine.

Why are some of the other ingredients in vaccines?

To keep vaccines safe and effective, they contain ingredients such as aluminum salts, antibiotics, and formaldehyde. These ingredients have not been linked to disease or illness. Below are some of the ingredients in vaccines.

Antibiotics – Antibiotics are used in some vaccines to prevent bacterial contamination when the vaccine is being made.

Aluminum salts – Aluminum salts have been used in vaccines for many years. They improve the body's immune response to the vaccine, giving you better protection from disease.

Children are naturally exposed to aluminum in the environment. Aluminum is found in the air, food and water. It is even in breast milk and infant formula. The amount of aluminum in a vaccine is similar to that in the infant formula a baby may drink in a day.

Formaldehyde – Some vaccines are made from live germs or toxins, which need to be killed or made inactive so they do not cause disease. Formaldehyde is used to do this, and then it is removed. Any tiny amount left in the vaccine will not harm your child.

Other ingredients – Sugars, amino acids, salts, and proteins, such as albumin and gelatin, help keep vaccines stable and safe when they are being made, shipped and stored.

Do childhood vaccines contain thimerosal?

In B.C., thimerosal has not been used in any routine childhood vaccine since 2001, except for the influenza (flu) vaccine. Thimerosal is a mercury-containing preservative that is in the flu vaccine in small amounts to prevent bacterial and fungal growth. If a person received a vaccine contaminated with bacteria or fungi, they could get sick.

A large number of studies have shown no link between the use of vaccines containing thimerosal and harm to children. These studies are posted at the Institute of Medicine of the National Academies <http://iom.nationalacademies.org/Reports/2001/Immunization-Safety-Review-Thimerosal---Containing-Vaccines-and-Neurodevelopmental-Disorders.aspx>.

Do vaccines contain human or animal cells?

No. Vaccines do not contain human or animal cells. The viruses needed to make some vaccines can only be grown in human or animal cells. After the virus has been grown, it is separated from the cells and used to make the vaccine. So while human or animal cells may be used in the earlier stages of making the vaccine, no cells are present in the final product or vaccine.

Which vaccines contain egg protein and why?

The MMR (measles, mumps and rubella), MMRV (measles, mumps, rubella and varicella), and influenza (flu) vaccines contain egg protein. Egg protein is present in these vaccines because the viruses used to make them are grown in eggs (flu vaccine) or in cells taken from eggs (MMR and MMRV vaccines). Children with egg allergies can be safely immunized with these vaccines.

For more information

For more information on immunizations, visit ImmunizeBC at <https://immunizebc.ca/>.

For more information on childhood immunization, see:

- [HealthLinkBC File #50a Your baby's immune system and vaccines](#)
- [HealthLinkBC File #50b The benefits of immunizing your child](#)
- [HealthLinkBC File #50c Childhood vaccines are safe](#)

- [HealthLinkBC File #50e A better immunization experience for your child](#)



ImmunizeBC



BC Centre for Disease Control
An agency of the Provincial Health Services Authority

For more HealthLinkBC File topics, visit www.HealthLinkBC.ca/healthfiles or your local public health unit. For non-emergency health information and advice in B.C. visit www.HealthLinkBC.ca or call **8-1-1** (toll-free). For the deaf and hard of hearing, call **7-1-1**. Translation services are available in more than 130 languages on request.