



Ingredients of Vaccines - Fact Sheet

Chemicals commonly used in the production of vaccines include a suspending fluid (sterile water, saline, or fluids containing protein); preservatives and stabilizers (for example, albumin, phenols, and glycine); and adjuvants or enhancers that help improve the vaccine's effectiveness. Vaccines also may contain very small amounts of the culture material used to grow the virus or bacteria used in the vaccine, such as chicken egg protein.

What You Should Know

- Millions of doses of vaccines are administered to children in this country each year. Ensuring that those vaccines are potent, sterile, and safe requires the addition of minute amounts of chemical additives.
- Chemicals are added to vaccines to inactivate a virus or bacteria and stabilize the vaccine, helping to preserve the vaccine and prevent it from losing its potency over time.
- The amount of chemical additives found in vaccines is very small.
- All routinely recommended pediatric vaccines manufactured for the U.S. market are available in formulations that contain no thimerosal or only trace amounts.

Reference Materials

- [Vaccine ingredients sorted by vaccine !\[\]\(49aa2e1da5fe39294864e9598c593810_img.jpg\) \[3 pages\]](#)
(</vaccines/pubs/pinkbook/downloads/appendices/B/excipient-table-2.pdf>)
U.S. Vaccine excipients (inactive substance used as a carrier for the active ingredients of a medication) and media summary, part 2 from the "[Pink Book](#)"
(</vaccines/pubs/pinkbook/index.html>)"

Additional Facts

Additives used in the production of vaccines may include

1. suspending fluid (e.g. sterile water, saline, or fluids containing protein);
2. preservatives and stabilizers to help the vaccine remain unchanged (e.g. albumin, phenols, and glycine); and
3. adjuvants or enhancers to help the vaccine to be more effective.

Common substances found in vaccines include:

- **Aluminum** gels or salts of aluminum which are added as adjuvants to help the vaccine stimulate a better response. Adjuvants help promote an earlier, more potent response, and more persistent immune response to the vaccine.

See also: "[Aluminum in Vaccines: What you should know](http://www.chop.edu/export/download/pdfs/articles/vaccine-education-center/aluminum.pdf) [2 pages]

(<http://www.chop.edu/export/download/pdfs/articles/vaccine-education-center/aluminum.pdf>)

(<http://www.cdc.gov/Other/disclaimer.html>)" Also available in [Spanish](http://www.chop.edu/export/download/pdfs/articles/vaccine-education-center/aluminum-spa.pdf) [2 pages]

(<http://www.chop.edu/export/download/pdfs/articles/vaccine-education-center/aluminum-spa.pdf>)

(<http://www.cdc.gov/Other/disclaimer.html>)

- **Antibiotics** which are added to some vaccines to prevent the growth of germs (bacteria) during production and storage of the vaccine. No vaccine produced in the United States contains penicillin.
- **Egg protein** is found in influenza and yellow fever vaccines, which are prepared using chicken eggs. Ordinarily, persons who are able to eat eggs or egg products safely can receive these vaccines.
- **Formaldehyde** is used to inactivate bacterial products for toxoid vaccines, (these are vaccines that use an inactive bacterial toxin to produce immunity.) It is also used to kill unwanted viruses and bacteria that might contaminate the vaccine during production. Most formaldehyde is removed from the vaccine before it is packaged.
- **Monosodium glutamate (MSG)** and 2-phenoxy-ethanol which are used as stabilizers in a few vaccines to help the vaccine remain unchanged when the vaccine is exposed to heat, light, acidity, or humidity.
- **Thimerosal** is a mercury-containing preservative that is added to vials of vaccine that contain more than one dose to prevent contamination and growth of potentially harmful bacteria.

For children with a prior history of allergic reactions to any of these substances in vaccines, parents should consult their child's healthcare provider before vaccination.

What You Can Do

- To find out what chemical additives are in specific vaccines, ask your healthcare provider or pharmacist for a copy of the vaccine package insert, which lists all ingredients in the vaccine and discusses any known adverse reactions.
- To ensure the safety of vaccines, the Centers for Disease Control and Prevention (CDC), the Food and Drug Administration (FDA), the National Institutes of Health (NIH), and other Federal agencies routinely monitor and conduct research to examine any new evidence that would suggest possible problems with the safety of vaccines. To keep abreast of the latest information, continue to reference these materials.
- To report a health problem that followed vaccination you or your provider should call the Vaccine Adverse Event Reporting System (VAERS) at 1-800-822-7967.

For More Information

- **CDC-INFO Contact Center:**
English and Spanish
800-CDC-INFO (800-232-4636)
- **Journal article: *PEDIATRICS* December 2003**
[Addressing Parents' Concerns: Do Vaccines Contain Harmful Preservatives, Adjuvants, Additives, or Residuals?](http://pediatrics.aappublications.org/cgi/content/full/112/6/1394) (<http://pediatrics.aappublications.org/cgi/content/full/112/6/1394>)
(<http://www.cdc.gov/Other/disclaimer.html>)
Source: *Pediatrics* Vol. 112 No. 6 December 2003, pp. 1394-1397
...quantities of mercury, aluminum, formaldehyde, human serum albumin, antibiotics, and yeast proteins in vaccines have not been found to be harmful in humans or experimental animals...

Related Pages

- [Common Questions about Immunizations \(/vaccines/vac-gen/common-faqs.htm\)](/vaccines/vac-gen/common-faqs.htm)
- [Mercury \(Thimerosal\) in Vaccines \(http://www.cdc.gov/vaccinesafety/Concerns/thimerosal/index.html\)](http://www.cdc.gov/vaccinesafety/Concerns/thimerosal/index.html)
- [For Parents: Vaccine Ingredients \(/vaccines/parents/vaccine-decision/ingredients.html\)](/vaccines/parents/vaccine-decision/ingredients.html)

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