

VACCINE EXCIPIENT & MEDIA SUMMARY



This section begins with a summary of the excipients included in licensed vaccines in the United States, as of February 2001.

Following the list of excipients is a list of culture media used in the manufacturing process of vaccines licensed in the United States.

All reasonable efforts have been made to assure the accuracy of this information, but manufacturers may change product contents before that information is reflected here.

Excipients Included In U.S. Licensed Vaccines ¹		
Excipient	Use	Vaccine
Aluminum hydroxide	Adjuvant	Anthrax (<i>BioThrax</i>), DTaP (<i>Certiva</i> , <i>Infanrix</i> , <i>Acel-Imune</i>), DT (Massachusetts), Td (Massachusetts), Hib (<i>PedvaxHib</i>), Hib-Hepatitis B (<i>Comvax</i>), Hepatitis A (<i>Havrix</i> , <i>Vaqta</i>), Hepatitis B (<i>Engerix-B</i> , <i>Recombivax-HB</i>), Lyme disease (<i>LymeRix</i>)
Aluminum Phosphate	Adjuvant	DTaP (<i>Acel-Imune</i>), DTwP (Massachusetts, <i>BioPort</i>), DT (<i>Wyeth-Lederle</i>), Td (Massachusetts, <i>Wyeth-Lederle</i>), Pneumococcal (<i>Prevnar</i>), Rabies (<i>Bio-Rab</i>)
Aluminum potassium sulfate	Adjuvant	DTaP (<i>Tripedia</i>), DTwP (<i>Aventis Pasteur</i>), DT (<i>Aventis Pasteur</i>), Td (<i>Aventis Pasteur</i>)
Amino acids	Growth medium	Hepatitis A (<i>Havrix</i>), Typhoid oral (<i>Vivotif</i>)
Ammonium sulfate	Protein fractionation	Hib (<i>Act-HIB</i>)
Amphotericin B	Anti-bacterial	Rabies (<i>RabAvert</i>)
Ascorbic acid	Antioxidant	Typhoid oral (<i>Vivotif</i>)
Bactopeptone	Growth medium	Influenza (varies seasonally)
Beta-propiolactone	Viral inactivator	Influenza (<i>Fluvirin</i>), Rabies (<i>Imovax</i> , <i>RabAvert</i>)
Benzethonium chloride	Preservative	Anthrax (<i>BioThrax</i>)
Bovine albumin or serum	Growth medium, protein stabilizer	Hepatitis A (<i>Havrix</i> , <i>Vaqta</i>), Poliovirus attenuated (<i>Orimune</i>), Rabies (<i>Imovax</i> , <i>RabAvert</i>), Vaccinia (<i>DryVax</i>), Varicella (<i>Varivax</i>)
Brilliant green	Dye	Vaccinia (<i>DryVax</i>)
Chlortetracycline	Anti-bacterial	Rabies (<i>RabAvert</i>), Vaccinia (<i>DryVax</i>)
DNA	Manufacturing residue	Hepatitis A (<i>Vaqta</i>)
Ethylenediamine-tetraacetic acid sodium (EDTA)	Preservative	Rabies (<i>RabAvert</i>), Varicella (<i>Varivax</i>)
Egg protein	Growth medium	Influenza (all brands), Yellow fever (<i>YF-Vax</i>)
Fetuin (a bovine serum protein)	Affinity ligand for chromatography	DTaP (<i>Certiva</i>)

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Formaldehyde, formalin	Anti-microbial, preservative	Anthrax (<i>BioThrax</i>), DTaP (all brands), DTwP (all brands), DTwP-Hib (<i>Tetramune</i>), DT (all brands), Td (all brands), Hepatitis A (<i>Havrix</i> , <i>Vaqta</i>), Hib (<i>ActHIB</i>), Influenza (<i>Fluogen</i> , <i>FluShield</i> , <i>Fluzone</i>), Japanese encephalitis (<i>JE-Vax</i>), Poliovirus inactivated (<i>Ipol</i>)
Gelatin	Stabilizer in freeze-drying, solvent	DTaP (<i>Acel-Imune</i> , <i>Tripedia</i>), Influenza (<i>Fluzone</i>), Japanese encephalitis (<i>JE-Vax</i>), Measles (<i>Attenuvax</i>), Mumps (<i>Mumpsvax</i>), Rubella (<i>Meruvax II</i>), MMR (<i>MMR-II</i>), Rabies (<i>RabAvert</i>), Typhoid oral (<i>Vivotif</i>), Varicella (<i>Varivax</i>), Yellow fever (<i>YF-Vax</i>)
Gentamicin	Anti-bacterial	Influenza (<i>FluShield</i>)
Glycerin	Solvent	Vaccinia (<i>DryVax</i>)
Glycine	Protein stabilizer	DTaP (<i>Acel-Imune</i>), DTwP-Hib (<i>Tetramune</i>), DT (most brands), Td (most brands)
Human serum albumin	Growth medium	Rabies (<i>Imovax</i>)
Hydrochloric acid	Adjust pH	DTaP (most brands), DT (most brands)
Hydrogen peroxide	Toxin detoxifier	DTaP (<i>Certiva</i>)
Kanamycin	Anti-bacterial	Lyme disease (<i>LymeRix</i>)
Lactose	Stabilizer in freeze-drying, filling	BCG (<i>Tice</i>), Hib (some packages), Meningococcal (<i>Menomune</i>), Typhoid oral (<i>Vivotif</i>)
Magnesium stearate	Lubricant for capsule filling	Typhoid oral (<i>Vivotif</i>)
Monosodium glutamate	Stabilizer	Varicella (<i>Varivax</i>)
Mouse serum protein	Growth medium	Japanese encephalitis (<i>JE-Vax</i>)
MRC-5 cellular protein	Growth medium	Hepatitis A (<i>Havrix</i> , <i>Vaqta</i>), Rabies (<i>Imovax</i> , <i>RabAvert</i>), Varicella (<i>Varivax</i>)
Neomycin	Anti-bacterial	Influenza (<i>Fluvirin</i>), Measles (<i>Attenuvax</i>), Mumps (<i>Mumpsvax</i>), Rubella (<i>Meruvax II</i>), MMR (<i>MMR-II</i>), Poliovirus attenuated (<i>Orimune</i>), Poliovirus inactivated (<i>Ipol</i>), Rabies (<i>Imovax</i> , <i>RabAvert</i>), Vaccinia (<i>DryVax</i>), Varicella (<i>Varivax</i>)
Ovalbumin	Growth medium	Rabies (<i>RabAvert</i>)
Phenol	Preservative, anti-bacterial	Pneumococcal (<i>Pneumovax-23</i>), Typhoid inactivated (<i>Typhim Vi</i>), Vaccinia (<i>DryVax</i>)
Phenol red (phenolsulfonphthalein)	pH indicator, dye	Poliovirus attenuated (<i>Orimune</i>), Rabies (<i>Imovax</i>)
2-Phenoxyethanol	Preservative	DTaP (<i>Infanrix</i>), Hepatitis A (<i>Havrix</i>), Lyme disease (<i>LymeRix</i>), Poliovirus inactivated (<i>Ipol</i>)

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Phosphate buffers (eg, disodium, monosodium, potassium, sodium dihydrogen phosphate)	Adjust pH	DTaP (all brands), DT (most brands), Hib (<i>Act-Hib</i>), Hepatitis A (<i>Havrix</i>), Hepatitis B (<i>Engerix-B</i>), Lyme disease (<i>LymeRix</i>), Poliovirus inactivated (<i>Ipol</i>), Rabies (<i>BioRab</i>), Typhoid inactivated (<i>Typhim Vi</i>), Varicella (<i>Varivax</i>)
Polydimethylsiloxane	Anti-foaming agent	Typhoid inactivated (<i>Typhim Vi</i>)
Polyethylene glycol p-isooctylphenyl ether (Triton X-100)	Nonionic surfactant (viral inactivation)	Influenza (<i>Fluzone</i>)
Polymyxin B	Anti-bacterial	Influenza (<i>Fluvirin</i>), Poliovirus inactivated (<i>Ipol</i>), Vaccinia (<i>DryVax</i>)
Polyoxyethylene 9-10 nonylphenol (Triton N-101, octoxynol 9)	Nonionic surfactant (viral inactivation)	Influenza (<i>Fluvirin</i>)
Polysorbate 20	Surfactant	Hepatitis A (<i>Havrix</i>)
Polysorbate 80	Surfactant	DTaP (<i>Acel-Imune</i> , <i>Infanrix</i> , <i>Tripedia</i>), Influenza (<i>Fluogen</i>)
Potassium glutamate	Stabilizer	Rabies (<i>RabAvert</i>)
Silicon	Anti-foaming agent	Lyme disease (<i>LymeRix</i>)
Sodium acetate	Adjust pH	DT (some brands), Td (some brands)
Sodium bisulfite	Preservative	Influenza (<i>Fluogen</i>)
Sodium borate	Adjust pH	Hepatitis A (<i>Vaqta</i>), Hib-Hepatitis B (<i>Comvax</i>)
Sodium chloride	Adjust tonicity	Most vaccines, including Anthrax, BCG, Cholera, DTaP, DTwP, DTwP-Hib, DT, Td, Hepatitis A, Hepatitis B, Hib, Influenza, Lyme disease, Pneumococcal, Polio inactivated, Rabies, Typhoid inactivated, Varicella, Yellow fever
Sodium hydroxide	Adjust pH	DT (most brands), Td (most brands)
Sorbitol	Stabilizer, solvent	Measles (<i>Attenuvax</i>), Mumps (<i>MumpsVax</i>), Rubella (<i>Meruvax II</i>), MMR (<i>MMR-II</i>), Polio attenuated, Yellow fever (<i>YF-Vax</i>)
Streptomycin	Anti-bacterial	Influenza (<i>Fluogen</i>), Poliovirus attenuated (<i>Orimune</i>), Poliovirus inactivated (<i>Ipol</i>), Vaccinia (<i>DryVax</i> [dihydrostreptomycin])
Sucrose	Stabilizer in freeze-drying	Hib (<i>Act-HIB</i>), Typhoid oral (<i>Vivotif</i>), Varicella (<i>Varivax</i>)
Thimerosal	Preservative in some multidose containers (see package labeling for precise content)	DTaP (some containers), DTwP (most containers), DT (most brands), Td (most brands), Hepatitis B (some packages), Hib (some packages), Influenza (all brands), Japanese encephalitis (<i>JE-Vax</i>), Meningococcal (<i>Menomune</i>), Pneumococcal (<i>Pnu-Imune 23</i>), Rabies (<i>BioRab</i>)
Tri(n)butylphosphate	Viral inactivator	Influenza (<i>FluShield</i>)

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Excipient	Use	Vaccine
Vitamins unspecified	Growth medium	Rabies (<i>Imovax</i>)
Yeast protein	Growth medium	Hepatitis B (<i>Engerix-B</i> , <i>Recombivax-HB</i>), Hib (<i>HibTiter</i>), Hib-Hepatitis B (<i>Comvax</i>)

¹ Proprietary names appear in italics.

References: Grabenstein JD. Immunologic necessities: Diluents, adjuvants, and excipients. *Hosp Pharm* 1996;31:1387-92,1397-1401.

Grabenstein JD. Clinical management of hypersensitivities to vaccine components. *Hosp Pharm* 1997;32:77-84,87.

Vaccine Excipient & Media Summary

Vaccine-Production Media ¹	
Vaccine Culture Media	Vaccine(s)
Bovine protein	Pneumococcal (<i>Pneumovax-23</i> , <i>Pnu-Imune 23</i>), Poliovirus attenuated (<i>Orimune</i>), Typhoid oral (<i>Vivotif</i>)
Calf skin	Vaccinia (<i>DryVax</i>)
Chick embryo fibroblast tissue culture	Measles (<i>Attenuvax</i>), Mumps (<i>Mumpsvax</i>), combination vaccines containing them, Rabies (<i>RabAvert</i>)
Chicken embryo (fertilized egg)	Influenza (all brands), Yellow fever (<i>YF-Vax</i>)
Cohen-Wheeler, modified (pertussis components)	DTaP (alternate is Stainer-Scholte media), DTwP (most brands, alternate is Bordet-Gengou media)
Escherichia coli	Lyme disease (<i>LymeRix</i>)
Human diploid tissue culture, MRC-5	Hepatitis A (<i>Havrix</i> , <i>Vaqta</i>), Poliovirus inactivated (<i>Poliovax</i>), Rabies (<i>Imovax</i>), Varicella (<i>Varivax</i>)
Human diploid tissue culture, WI-38	Rubella (<i>Meruvax II</i>), combination vaccines containing it, Varicella (<i>Varivax</i>)
Lathman	DTaP (<i>Infanrix</i> , tetanus component)
Linggoud-Fenton	DTaP (<i>Infanrix</i> , diphtheria component)
Monkey kidney tissue culture, Cercopithecus	Poliovirus attenuated (<i>Orimune</i>)
Monkey kidney tissue culture, Vero (Vervet or African green monkeys)	Poliovirus inactivated (<i>Ipol</i>)
Mouse brain	Japanese encephalitis (<i>JE-Vax</i>)
Mueller-Miller media	Diphtheria and tetanus vaccines (most brands)
Rhesus fetal lung tissue culture	Rabies (<i>BioRab</i>)
Stainer-Scholte	DTaP (<i>Infanrix</i> , pertussis component)
Soy peptone broth	Pneumococcal (<i>Pprevnar</i>)
Synthetic/semi-synthetic	Anthrax (<i>BioThrax</i>), BCG (<i>Tice</i>), DT (all brands), Td (all brands), Hib (all brands), Meningococcal (<i>Menomune</i>), Pneumococcal (<i>Pneumovax-23</i> , <i>Pnu-Imune 23</i>), Typhoid inactivated (<i>Typhim Vi</i>)
Yeast or yeast extract	Hepatitis B (<i>Engerix-B</i> , <i>Recombivax-HB</i>), Hib (<i>HibTiter</i>), Hib-Hepatitis B (<i>Comvax</i>), Lyme disease (<i>LymeRix</i>)

¹ Proprietary names appear in italics.