

Vaccine Excipient & Media Summary



This section begins with a summary of the excipients included in licensed vaccines in the United States, as of the revision date at the bottom of the page.

Excipients are inactive ingredients of a drug product necessary for production of a finished pharmaceutical formulation.

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

Growth media are culture materials used to produce mass quantities of a microorganism anti-body, or other immunologic agent, suitable for further processing into a finished pharmaceutical product.

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

Excipients Included in US Licensed Vaccines*		
Excipient	Use	Vaccine
Albumin, egg (Ovalbumin)	Growth medium	Rabies (<i>RabAvert</i>)
Albumin, human serum	Component of growth medium, protein stabilizer	Measles (<i>Attenuvax</i>), MMR (<i>MMR-II</i>), Mumps (<i>Mumpsvax</i>), Rabies (<i>Imovax</i>), Rubella (<i>Meruvax II</i>)
Albumin or serum, bovine	Component of growth medium, protein stabilizer	Hepatitis A (<i>Havrix</i> , <i>Vaqta</i>), Measles (<i>Attenuvax</i>), MMR (<i>MMR-II</i>), Mumps (<i>Mumpsvax</i>), Rabies (<i>Imovax</i> , <i>RabAvert</i>), Rubella (<i>Meruvax II</i>), Vaccinia (<i>Dryvax</i>), Varicella (<i>Varivax</i>)
Aluminum hydroxide	Adjuvant	Anthrax (<i>BioThrax</i>), DTaP (<i>Infanrix</i>), DTaP-Hep B-IPV (<i>Pediarix</i>), DT (Massachusetts), Td (Massachusetts), Hepatitis A (<i>Havrix</i>), Hepatitis A-Hepatitis B (<i>Twinrix</i>), Hepatitis B (<i>Engerix-B</i>), Tdap (<i>Boostrix</i>)
Aluminum phosphate	Adjuvant	DTaP (<i>Daptacel</i>), Td (Aventis Pasteur, Massachusetts), Hepatitis A-Hepatitis B (<i>Twinrix</i>), Pneumococcal (<i>Prennar</i>), Rabies (<i>BioRab</i>)
Aluminum potassium sulfate	Adjuvant	DTaP (<i>Daptacel</i> , <i>Tripedia</i>), DTaP-Hib (<i>TriHIBit</i>), DT (Aventis Pasteur)
Amino acids	Component of growth medium	Anthrax (<i>BioThrax</i>), Hepatitis A (<i>Havrix</i>), Hepatitis A-Hepatitis B (<i>Twinrix</i>), Td (Aventis Pasteur), Typhoid oral (<i>Vivotif</i>)
Ammonium sulfate	Protein fractionation	DTaP-Hib (<i>TriHIBit</i>), Hib (<i>Act-HIB</i>)
Amphotericin B	Antibacterial	Rabies (<i>RabAvert</i>)
Ascorbic acid	Antioxidant	Typhoid oral (<i>Vivotif</i>)
Bactopeptone	Component of growth medium	Influenza (varies seasonally)

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Beta-propiolactone	Viral inactivator	Influenza (<i>Fluvirin</i>), Rabies (<i>Imovax</i> , <i>RabAvert</i>)
Benzethonium chloride	Preservative	Anthrax (<i>BioThrax</i>)
Brilliant green	Dye	Vaccinia (<i>Dryvax-historic</i>)
Chlortetracycline	Antibacterial	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	Manufacturing residue	Influenza (all brands), Yellow fever (<i>YF-Vax</i>)
Formaldehyde, formalin	Antimicrobial, preservative	Anthrax (<i>BioThrax</i>), DTaP (all brands), DTaP-Hep B-IPV (<i>Pediarix</i>), DTaP-Hib (<i>TriHIBit</i>), DT (all brands), Td (all brands), Hepatitis A (<i>Havrix</i> , <i>Vaqta</i>), Hepatitis A-Hepatitis B (<i>Twinrix</i>), Hib (<i>ActHIB</i>), Hib-Hepatitis B (<i>Comvax</i>), Influenza (<i>Fluzone</i>), Japanese encephalitis (<i>JE-Vax</i>), Poliovirus inactivated (<i>Ipol</i>), Tdap (<i>Boostrix</i>)
Gelatin	Stabilizer in freeze-drying, solvent	DTaP (<i>Tripedia</i>), DTaP-Hib (<i>TriHIBit</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	Antibacterial	Influenza (<i>FluMist</i>)
Glutaraldehyde	Toxin detoxifier	DTaP (<i>Infanrix</i>), DTaP-Hep B-IPV (<i>Pediarix</i>), Tdap (<i>Boostrix</i>)
Glycerin	Solvent	Vaccinia (<i>DryVax</i>)
Glycine	Protein stabilizer	DT (most brands), Td (most brands)
Hydrochloric acid	Adjust pH	DTaP (most brands), DT (most brands)
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	Influenza (<i>FluMist</i>), Varicella (<i>Varivax</i>)
Mouse serum protein	Manufacturing residue	Japanese encephalitis (<i>JE-Vax</i>)

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MRC-5 cellular protein	Manufacturing residue	Hepatitis A (<i>Havrix</i> , <i>Vaqta</i>), Hepatitis A-Hepatitis B (<i>Twinrix</i>), Rabies (<i>Imovax</i>), Poliovirus inactivated (<i>Poliovax</i>), Varicella (<i>Varivax</i>)
Neomycin	Antibacterial	DTaP-Hep B-IPV (<i>Pediarix</i>), Hepatitis A-Hepatitis B (<i>Twinrix</i>), Influenza (<i>Fluvirin</i>), Measles (<i>Attenuvax</i>), Mumps (<i>Mumpsavax</i>), Rubella (<i>Meruvax II</i>), MMR (<i>MMR-II</i>), Poliovirus inactivated (<i>Ipol</i>), Rabies (<i>Imovax</i> , <i>RabAvert</i>), Vaccinia (<i>DryVax</i>), Varicella (<i>Varivax</i>)
Phenol	Preservative, antibacterial	Pneumococcal (<i>Pneumovax-23</i>), Typhoid inactivated (<i>Typhim Vi</i>) Vaccinia (<i>Dryvax</i>)
Phenol red (phenolsulfonphthalein)	pH indicator, dye	Rabies (<i>Imovax</i>)
2-Phenoxyethanol	Preservative	DTaP (<i>Infanrix</i> , <i>Daptacel</i>), DTaP-Hep B-IPV (<i>Pediarix</i>), Hepatitis A (<i>Havrix</i>), Hepatitis A-Hepatitis B (<i>Twinrix</i>), Poliovirus inactivated (<i>Ipol</i>), Td (Aventis Pasteur)
Phosphate buffers (eg, disodium, monosodium, potassium, sodium dihydrogenphosphate)	Adjust pH	DTaP (most brands), DT (most brands), Hib (<i>Act-Hib</i>), Hepatitis A (<i>Havrix</i>), Hepatitis A-Hepatitis B (<i>Twinrix</i>), Hepatitis B (<i>Engerix-B</i>), Influenza (<i>FluMist</i>), Measles (<i>Attenuvax</i>), Meningococcal (<i>Menactra</i>), Mumps (<i>Mumpsavax</i>), Poliovirus inactivated (<i>Ipol</i>), Rabies (<i>BioRab</i>), Rubella (<i>Meruvax II</i>), MMR (<i>MMR-II</i>), Typhoid inactivated (<i>Typhim Vi</i>), Varicella (<i>Varivax</i>)
Polydimethylsiloxane	Antifoaming 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	Antibacterial	DTaP-Hep B-IPV (<i>Pediarix</i>), Influenza (<i>Fluvirin</i>), Poliovirus inactivated (<i>Ipol</i>), Vaccinia (<i>Dryvax</i>)
Polyoxyethylene9-10 nonyl phenol (Triton N-101, octoxynol 9)	Nonionic surfactant (viral inactivation)	Influenza (<i>Fluvirin</i>)
Polysorbate 20	Surfactant	Hepatitis A (<i>Havrix</i>), Hepatitis A-Hepatitis B (<i>Twinrix</i>)
Polysorbate 80	Surfactant	DTaP (<i>Infanrix</i> , <i>Tripedia</i>), DTaP-Hep B-IPV (<i>Pediarix</i>), DTaP-Hib (<i>TriHIBit</i>), Tdap (<i>Boostrix</i>)
Potassium glutamate	Stabilizer	Rabies (<i>RabAvert</i>)

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Sodium acetate	Adjust pH	DT (some brands), Td (some brands)
Sodium borate	Adjust pH	Hepatitis A (<i>Vaqta</i>), Hib-Hepatitis B (<i>Comvax</i>)
Sodium chloride	Adjust tonicity	Most vaccines, including Anthrax, BCG, Measles, Meningococcal (<i>Menactra</i>), Mumps, MMR, Pneumococcal, Polio inactivated, Rabies, Rubella, Typhoid inactivated, Varicella, Yellow fever, Tdap (<i>Boostrix</i>)
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>), Yellow fever (<i>YF-Vax</i>)
Streptomycin	Antibacterial	Poliovirus inactivated (<i>Ipol</i>), Vaccinia (<i>Dryvax</i>)
Sucrose	Stabilizer	DTaP-Hib (<i>TriHIBit</i>), Hib (<i>Act-HIB</i>), Influenza (<i>FluMist</i>), Measles (<i>Attenuvax</i>), Mumps (<i>Mumpsvax</i>), MMR (<i>MMR-II</i>), Typhoid oral (<i>Vivotif</i>), Varicella (<i>Varivax</i>)
Thimerosal	Preservative in some multi-dose containers (see package labeling for precise content)	DTaP (some multidose containers), DTaP-Hib (<i>TriHIBit</i>), DT (some multidose containers), Td (some multidose containers), Hepatitis B (some multidose containers), Hib (some multidose containers), Influenza (some multidose containers), Japanese encephalitis (<i>JE-Vax</i>), Meningococcal (<i>Menomune</i>), Rabies (<i>Bio-Rab</i>). Some single-dose containers contain trace amounts of thimerosal from the production process, but substantially lower concentrations than if used as a preservative. Consult product monographs and labeling for details.
Urea	Stabilizer	Varicella vaccine (<i>Varivax</i> , refrigerator stable)
Vitamins unspecified	Component of growth medium	Anthrax (<i>BioThrax</i>), Rabies (<i>Imovax</i>), Td (Aventis Pasteur)
Yeast protein	Component of growth medium	DTaP-Hib B-IPV (<i>Pediarix</i>), Hepatitis A-Hepatitis B (<i>Twinrix</i>), Hepatitis B (<i>Engerix-B</i> , <i>Recombivax-HB</i>), Hib (<i>HibTiter</i>), Hib-Hepatitis B (<i>Comvax</i>)

* Proprietary names appear in italics.

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Vaccine-Production Media*	
Vaccine Culture Media	Vaccine(s)
Bovine protein	DTaP-Hep B-IPV (poliovirus component, <i>Pediarix</i>), Pneumococcal (<i>Pneumovax-23</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>RabA-vert</i>)
Chick kidney cells	Influenza (master viruses for <i>FluMist</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)
Fenton media containing bovine casein	Tdap (<i>Boostrix</i>)
Human diploid tissue culture, MRC-5	Hepatitis A (<i>Havrix</i> , <i>Vaqta</i>), Hepatitis A-Hepatitis B (<i>Twinrix</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>)
Lathan medium derived from bovine casein	DTaP (<i>Infanrix</i> , tetanus component), DTaP-Hep B-IPV (<i>Pediarix</i>), Tdap (<i>Boostrix</i>)
Linggoud-Fenton medium containing bovine extract	DTaP (<i>Infanrix</i> diphtheria component), DTaP-Hep B-IPV (<i>Pediarix</i>), Tdap (<i>Boostrix</i>)
Monkey kidney tissue culture, Vero (Vervet or African green monkeys)	DTaP-Hep B-IPV (poliovirus component, <i>Pediarix</i>), Poliovirus inactivated (<i>Ipol</i>)
Mouse brain	Japanese encephalitis (<i>JE-Vax</i>)
Mueller-Hinton agar medium	Meningococcal conjugate (<i>Menactra</i>)
Mueller-Miller medium	Diphtheria and tetanus vaccines (most brands), meningococcal conjugate (<i>Menactra</i>)
Rhesus fetal lung tissue culture	Rabies (<i>BioRab</i>)
Stainer-Scholte medium	DTaP (<i>Daptacel</i> , <i>Infanrix</i> , pertussis component), DTaP-Hep B-IPV (<i>Pediarix</i>), Tdap (<i>Boostrix</i>)
Soy peptone broth	Pneumococcal (<i>Prevnar</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>), Typhoid inactivated (<i>Typhim Vi</i>)
Watson-Scherp medium	Meningococcal conjugate (<i>Menactra</i>)
Yeast or yeast extract (typically <i>Saccharomyces cerevisiae</i>)	Hepatitis A-Hepatitis B (<i>Twinrix</i>), Hepatitis B (<i>Engerix-B</i> , <i>Recombivax-HB</i>), Hib (<i>HibTiter</i>), Hib-Hepatitis B (<i>Comvax</i>), Medium for growing <i>Corynebacterium diphtheriae</i> strain C7 (b197) to obtain CRM ₁₉₇ protein for conjugation to polysaccharides (<i>HibTiter</i> , <i>Prevnar</i>).

* Proprietary names appear in italics.

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- References:** Canadian National Advisory Committee on Immunization. Statement on thimerosal. *Can Comm Dis Rep*. 2003;29(ACS-1):1-10.
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