

Vaccine Ingredients and Manufacturer Information

(alphabetical order by vaccine)

We have listed **vaccine ingredients** (substances that appear in the final vaccine product), **process ingredients** (substances used to create the vaccine that may or may not appear in the final vaccine product), and **growth mediums** (the substances vaccines are grown in) for vaccines approved by the Food & Drug Administration (FDA) and [commonly recommended by the Centers for Disease Control \(CDC.\)](#) Controversial products used to make vaccines: [African Green Monkey \(Vero\) cells](#), [aluminum](#), [cow products](#), [Cocker Spaniel cells](#), [formaldehyde](#), [human fetal lung tissue cells](#), [insect products](#), and [mouse brains](#).



1. [Vaccines and Ingredients](#)
2. [Glossary and Details for Ingredients](#)
3. [Sources](#)

Though not listed, each vaccine contains strains of the virus being vaccinated against. Each vaccine entry links to the manufacturer’s package insert that contains information about dosage, ingredient quantity, and how the vaccine is made. Some vaccines, like [influenza vaccines](#), are modified frequently and you may wish to consult the package inserts online and your doctor for the most current information.

I. VACCINES AND INGREDIENTS

- | | |
|--|--|
| <ol style="list-style-type: none"> 1. Adenovirus 2. Anthrax 3. BCG (tuberculosis) 4. Cholera 5. DT (diphtheria & tetanus) 6. DTap (diphtheria, tetanus, & pertussis) 7. DTap-IPV (diphtheria, tetanus, pertussis, & polio) 8. DTap-HepB-IPV (diphtheria, tetanus, pertussis, hepatitis B, & polio) | <ol style="list-style-type: none"> 18. Influenza A & B 19. Japanese Encephalitis 20. Meningococcal 21. Measles 22. MMR (measles, mumps, & rubella) 23. Pneumococcal 24. Polio 25. Rabies |
|--|--|

- 9. DTap-IPV/Hib (diphtheria, tetanus, pertussis, polio, & haemophilus influenzae type B)
- 10. Hib (haemophilus influenzae type B)
- 11. Hib/Hep B (haemophilus influenzae type B & hepatitis B)
- 12. Hep A (hepatitis A)
- 13. Hep B (hepatitis B)
- 14. Hep A/Hep B (hepatitis A & hepatitis B)
- 15. HPV (human papillomavirus)
- 16. Influenza A (H1N1) (swine flu)
- 17. Influenza A (H5N1) (bird flu)

- 26. Rotavirus
- 27. Rubella
- 28. Smallpox
- 29. TD (tetanus & diphtheria)
- 30. Tdap (tetanus, diphtheria, & pertussis)
- 31. Typhoid
- 32. Varicella (chickenpox)
- 33. Yellow Fever
- 34. Zoster (shingles)

1. Adenovirus Vaccine

| PROPER NAME | PROPER NAME | GROWTH MEDIUMS & PROCESS | VACCINE INGREDIENTS |
|--|--|--|--|
| MANUFACTURER | PACKAGE INSERT | INGREDIENTS | (not in order of quantity; see package insert for quantities) |
| (click for package insert) | DATE | | |
| Adenovirus Type 4 and Type 7 Vaccine, Live, Oral -- | Barr Labs/Teva Pharmaceuticals (under contract with US Army) Apr. 2014 | human-diploid fibroblast cell cultures (WI-38), Dulbecco's Modified Eagle's Medium, fetal bovine serum, sodium bicarbonate | sucrose, D-mannose, D-fructose, dextrose, potassium phosphate, plasdone C, anhydrous lactose, micro-crystalline cellulose, polacrillin potassium, magnesium stearate, cellulose acetate phthalate, alcohol, acetone, castor oil, FD&C Yellow #6 aluminum lake dye, human serum albumin, monosodium glutamate |

2. Anthrax Vaccine

| <u>PROPER NAME</u> | <u>PROPER NAME</u> | <u>GROWTH MEDIUMS & PROCESS</u> | <u>VACCINE INGREDIENTS</u> |
|-----------------------------|--------------------------|--|--|
| <u>MANUFACTURER</u> | <u>PACKAGE INSERT</u> | <u>INGREDIENTS</u> | (not in order of quantity; see package insert for quantities) |
| (click for package insert) | <u>DATE</u> | | |
| Anthrax Vaccine Adsorbed | Emergent Biosolutions | amino acids, vitamins, inorganic salts and sugars | aluminum hydroxide, benzethonium chloride, formaldehyde, proteins (including 83kDa protective antigen) |
| Biothrax | Nov. 2015 | | |

3. BCG Vaccine (tuberculosis)

| <u>PROPER NAME</u> | <u>PROPER NAME</u> | <u>GROWTH MEDIUMS & PROCESS</u> | <u>VACCINE INGREDIENTS</u> |
|----------------------------|--------------------------|---|---|
| <u>MANUFACTURER</u> | <u>PACKAGE INSERT</u> | <u>INGREDIENTS</u> | (not in order of quantity; see package insert for quantities) |
| (click for package insert) | <u>DATE</u> | | |
| BCG Live | Organon Teknika Corp. | glycerin, asparagine, citric acid, potassium phosphate, magnesium sulfate, iron ammonium citrate | lactose, saline |
| Tice BCG | Feb. 2009 | | |

4. Cholera Vaccine (tuberculosis)

| <u>PROPER NAME</u> | <u>PROPER NAME</u> | <u>GROWTH MEDIUMS & PROCESS</u> | <u>VACCINE INGREDIENTS</u> |
|------------------------------|-------------------------|---|---|
| <u>MANUFACTURER</u> | <u>PACKAGE INSERT</u> | <u>INGREDIENTS</u> | (not in order of quantity; see package insert for quantities) |
| (click for package insert) | <u>DATE</u> | | |
| Cholera Vaccine Live Oral | Pax Vax Bermuda Ltd. | casamino acids, yeast extract, mineral salts, anti- foaming agent | ascorbic acid, Hy-Case SF (hydrolyzed casein), sodium chloride, sucrose, dried lactose, sodium bicarbonate, sodium carbonate |
| Vaxchora | June 2016 | | |

5. DT Vaccine

(diphtheria & tetanus)

| <u>PROPER NAME</u> | <u>PROPER NAME</u> | <u>GROWTH MEDIUMS & PROCESS</u> | <u>VACCINE INGREDIENTS</u> |
|---|--------------------------------------|---|---|
| <u>MANUFACTURER</u> (click for package insert) | <u>PACKAGE INSERT</u> <u>DATE</u> | <u>INGREDIENTS</u> | (not in order of quantity; see package insert for quantities) |
| Diphtheria and Tetanus Toxoids Adsorbed -- | Sanofi Pasteur, Ltd. June 2013 | peptone, bovine extract, modified Mueller and Miller medium, aluminum phosphate, isotonic sodium chloride solution, casein, cysteine, dextrose, uracil, inorganic salts, vitamins | aluminum phosphate, formaldehyde |

6. DTap Vaccine (diphtheria, tetanus, & pertussis)

| <u>PROPER NAME</u> | <u>PROPER NAME</u> | <u>GROWTH MEDIUMS & PROCESS</u> | <u>VACCINE INGREDIENTS</u> |
|--|--------------------------------------|--|--|
| <u>MANUFACTURER</u> (click for package insert) | <u>PACKAGE INSERT</u> <u>DATE</u> | <u>INGREDIENTS</u> | (not in order of quantity; see package insert for quantities) |
| Diphtheria and Tetanus Toxoids and Acellular Pertussis Vaccine Adsorbed <u>Daptacel</u> | Sanofi Pasteur, Ltd. 2013 | Stainer-Scholte medium, modified Mueller's growth medium, modified Mueller-Miller casamino acid medium (without beef heart infusion), casamino acids, dimethyl-beta-cyclodextrin, ammonium sulfate, aluminum phosphate, glutaraldehyde, formaldehyde | aluminum phosphate, formaldehyde, glutaraldehyde, 2-Phenoxyethanol |
| Diphtheria and Tetanus Toxoids and Acellular Pertussis Vaccine Adsorbed <u>Infanrix</u> | GlaxoSmithKline Biologicals 2013 | formaldehyde, glutaraldehyde, Fenton medium (containing bovine extract), modified Latham medium (derived from bovine casein), modified Stainer-Scholte liquid medium, aluminum hydroxide | aluminum hydroxide, polysorbate 80, sodium chloride, formaldehyde |
| Diphtheria and Tetanus Toxoids | Sanofi Pasteur, Inc. | sodium phosphate, peptone-based medium, bovine | thimerosal, gelatin, polysorbate 80 (Tween 80) |

and Acellular
Pertussis Vaccine
Adsorbed

Dec. 2005

extract (US sourced),
formaldehyde, ammonium
sulfate, aluminum potassium
sulfate, modified Mueller and
Miller medium, modified
Stainer-Scholte medium,
isotonic sodium chloride
solution, sodium phosphate

formaldehyde, aluminum

[Tripedia*](#)

***This vaccine has
been
discontinued.**

7. DTap-IPV Vaccine (diphtheria, tetanus, pertussis, & polio)

| PROPER NAME | PROPER NAME | GROWTH MEDIUMS & PROCESS | VACCINE INGREDIENTS |
|---|-------------------------------------|---|--|
| MANUFACTURER <small>(click for package insert)</small> | PACKAGE INSERT DATE | INGREDIENTS | <small>(not in order of quantity; see package insert for quantities)</small> |
| Diphtheria and Tetanus Toxoids and Acellular Pertussis Adsorbed and Inactivated Poliovirus Vaccine Kinrix | GlaxoSmithKline Biologicals 2016 | formaldehyde, glutaraldehyde, aluminum hydroxide, Vero cells, calf serum, lactalbumin hydrolysate, Fenton medium (containing bovine extract), modified Latham medium (derived from bovine casein), modified Stainer-Scholte liquid medium | polysorbate 80 (Tween 80) neomycin sulfate, polymyxin B, aluminum hydroxide, sodium chloride, formaldehyde |
| Diphtheria and Tetanus Toxoids and Acellular Pertussis Adsorbed and Inactivated Poliovirus Vaccine Quadracel | Sanofi Pasteur Mar. 2015 | modified Mueller's growth medium, ammonium sulfate, modified Mueller-Miller casamino acid medium (without beef heart infusion), aluminum phosphate, modified Stainer-Scholte medium (added casamino acids and dimethyl-beta-cyclodextrin), glutaraldehyde, formaldehyde, MRC-5 cells (with added Medium 199 without calf serum) | aluminum phosphate, 2-phenoxyethanol, water, polysorbate 80, formaldehyde, glutaraldehyde, bovine serum albumin, neomycin, polymyxin B sulfate |

8. DTap-HepB-IPV Vaccine

(diphtheria, tetanus, pertussis, hepatitis B, & polio)

| PROPER NAME | PROPER NAME | GROWTH MEDIUMS & PROCESS | VACCINE INGREDIENTS |
|--|-------------------------------------|---|---|
| MANUFACTURER | PACKAGE INSERT | INGREDIENTS | (not in order of quantity; see package insert for quantities) |
| (click for package insert) | DATE | | |
| Diphtheria and Tetanus Toxoids and Acellular Pertussis Adsorbed, Hepatitis B (Recombinant) and Inactivated Poliovirus Vaccine Combined | GlaxoSmithKline Biologicals 2016 | formaldehyde, glutaraldehyde, aluminum hydroxide, aluminum phosphate, lactalbumin hydrolysate, calf serum, Fenton medium (containing bovine extract), modified Latham medium (derived from bovine casein), modified Stainer-Scholte liquid medium, Vero cells | polysorbate 80 (Tween 80) neomycin sulfate, polymyxin B, yeast protein, aluminum salts, sodium chloride, formaldehyde |
| <u>Pediarix</u> | | | |

9. DTap-IPV/Hib Vaccine

(diphtheria, tetanus, pertussis, polio, & haemophilus influenzae type B)

| PROPER NAME | PROPER NAME | GROWTH MEDIUMS & PROCESS | VACCINE INGREDIENTS |
|--|------------------------------|--|--|
| MANUFACTURER | PACKAGE INSERT | INGREDIENTS | (not in order of quantity; see package insert for quantities) |
| (click for package insert) | DATE | | |
| Diphtheria and Tetanus Toxoids and Acellular Pertussis Adsorbed, Inactivated Poliovirus and Haemophilus b Conjugate (Tetanus Toxoid Conjugate) Vaccine | Sanofi Pasteur, Inc. 2013 | aluminum phosphate, formaldehyde, glutaraldehyde, 2-phenoxyethanol, modified Mueller's Growth Medium, Mueller-Miller casamino acid medium (without beef heart infusion), modified Stainer-Scholte medium (with added casamino acids, dimethyl-beta-cyclodextrin), MRC-5 cells, CMRL 1969 medium (supplemented with calf serum), ammonium sulfate, water, Medium 199 (without calf serum) | polysorbate 80, bovine serum albumin, neomycin, sucrose, glutaraldehyde, polymyxin B sulfate, aluminum phosphate, formaldehyde, 2-phenoxyethanol |
| <u>Pentacel</u> | | | |

10. Hib Vaccine (haemophilus influenzae type B)

| PROPER NAME <hr/> MANUFACTURER <small>(click for package insert)</small> | PROPER NAME <hr/> PACKAGE INSERT DATE | GROWTH MEDIUMS & PROCESS INGREDIENTS | VACCINE INGREDIENTS <small>(not in order of quantity; see package insert for quantities)</small> |
|---|---|--|---|
| Haemophilus b Conjugate Vaccine (Tetanus Toxoid Conjugate) <hr/> ActHIB | Sanofi Pasteur, Inc. <hr/> May 2016 | ammonium sulfate, Modified Mueller and Miller medium , saline diluent, formaldehyde , casein derivatives | sucrose, purified capsular polysaccharide |
| Haemophilus b Conjugate Vaccine (Tetanus Toxoid Conjugate) <hr/> Hiberix | GlaxoSmithKline Biologicals <hr/> 2016 | formaldehyde , synthetic medium, semi-synthetic medium, saline diluent, lactose | lactose, sodium chloride, formaldehyde , purified capsular polysaccharide |
| Haemophilus B Conjugate Vaccine (Meningococcal Protein Conjugate) <hr/> Liquid PedvaxHIB | Merck Sharp & Dohme Corp. <hr/> Dec. 2010 | complex fermentation media, ethanol | amorphous aluminum hydroxyphosphate sulfate , sodium chloride |

11. Hib/Hep B Vaccine (haemophilus influenzae type B & hepatitis B)

| PROPER NAME <hr/> MANUFACTURER <small>(click for package insert)</small> | PROPER NAME <hr/> PACKAGE INSERT DATE | GROWTH MEDIUMS & PROCESS INGREDIENTS | VACCINE INGREDIENTS <small>(not in order of quantity; see package insert for quantities)</small> |
|--|---|---|---|
| Haemophilus b Conjugate (Meningococcal Protein Conjugate) and Hepatitis B (Recombinant) Vaccine <hr/> COMVAX* | Merck & Co., Inc. <hr/> Dec. 2010 | yeast (vaccine contains no detectable yeast DNA), nicotinamide adenine dinucleotide, hemin chloride, soy peptone, dextrose, mineral salts, amino acids, formaldehyde, potassium, aluminum sulfate, aluminum hydroxyphosphate sulfate, | aluminum hydroxyphosphate sulphate, sodium chloride, formaldehyde |

***This vaccine has been discontinued.**

sodium borate

12. Hep A Vaccine (hepatitis A)

| PROPER NAME MANUFACTURER (click for package insert) | PROPER NAME PACKAGE INSERT DATE | GROWTH MEDIUMS & PROCESS INGREDIENTS | VACCINE INGREDIENTS (not in order of quantity; see package insert for quantities) |
|---|--|--|--|
| Hepatitis A Vaccine, Inactivated <u>Havrix</u> | GlaxoSmithKline Biologicals <u>2016</u> | MRC-5 cells | aluminum hydroxide, amino acid supplement, polysorbate 20, formaldehyde, neomycin sulfate, phosphate buffered saline, MRC-5 cellular proteins, aminoglycoside antibiotic |
| Hepatitis A Vaccine, Inactivated <u>VAQTA</u> | Merck & Co., Inc. <u>Dec. 2010</u> | amorphous aluminum hydroxyphosphate sulfate, formaldehyde, neomycin, MRC-5 fibroblasts | bovine albumin, sodium borate, formaldehyde, non-viral proteins, sodium chloride, neomycin |

13. Hep B Vaccine (hepatitis B)

| PROPER NAME MANUFACTURER (click for package insert) | PROPER NAME PACKAGE INSERT DATE | GROWTH MEDIUMS & PROCESS INGREDIENTS | VACCINE INGREDIENTS (not in order of quantity; see package insert for quantities) |
|---|--|--|---|
| Hepatitis B Vaccine (Recombinant) <u>Engerix-B</u> | GlaxoSmithKline Biologicals <u>2016</u> | aluminum hydroxide | aluminum hydroxide, yeast protein, phosphate buffers, sodium chloride, sodium dihydrogen, phosphate dihydrate |
| Hepatitis B Vaccine (Recombinant) <u>Recombivax</u> | Merck & Co., Inc. <u>2014</u> | yeast protein, soy peptone, dextrose, amino acids, mineral salts, alum | formaldehyde, yeast protein, aluminum |

(potassium aluminum sulfate),
amorphous aluminum
hydroxyphosphate sulfate,
formaldehyde

14. Hep A/Hep B Vaccine (hepatitis A & hepatitis B)

| PROPER NAME | PROPER NAME | GROWTH MEDIUMS & PROCESS | VACCINE INGREDIENTS |
|---|--|---|---|
| MANUFACTURER | PACKAGE INSERT | INGREDIENTS | (not in order of quantity; see package insert for quantities) |
| (click for package insert) | DATE | | |
| Hepatitis A Inactivated & Hepatitis B (Recombinant) Vaccine <u>Twinrix</u> | GlaxoSmithKline Biologicals 2016 | yeast protein, MRC-5 cells, formaldehyde, aluminum salts | neomycin sulfate, MRC-5 cell proteins, formaldehyde, yeast protein, water, aluminum phosphate, aluminum hydroxide, amino acids, sodium chloride, phosphate buffer, polysorbate 20 |

15. HPV Vaccine (human papillomavirus)

| PROPER NAME | PROPER NAME | GROWTH MEDIUMS & PROCESS | VACCINE INGREDIENTS |
|---|--|--|--|
| MANUFACTURER | PACKAGE INSERT | INGREDIENTS | (not in order of quantity; see package insert for quantities) |
| (click for package insert) | DATE | | |
| Human Papillomavirus Bivalent (Types 16 and 18) Vaccine, Recombinant <u>Cervarix</u> | GlaxoSmithKline Biologicals 2016 | vitamins, amino acids, lipids, mineral salts, aluminum (as hydroxide salt), sodium dihydrogen phosphate dihydrate, sodium chloride, water | insect cell and viral protein, sodium chloride, aluminum hydroxide, bacterial cell protein, sodium dihydrogen phosphate |
| Human Papillomavirus Quadrivalent (Types 6, 11, 16, 18) Vaccine, | Merck & Co., Inc. 2015 | yeast protein, vitamins, amino acids, mineral salts, carbohydrates, amorphous aluminum hydroxyphosphate sulfate, aluminum-containing | L-histidine, polysorbate 80, sodium borate, amorphous aluminum hydroxyphosphate sulfate adjuvant, sodium chloride, |

| | | | |
|--|--------------------------------------|--|---|
| <u>Recombinant</u> <u>Gardasil</u> | | <u>adjuvant</u> | yeast protein, water |
| <u>Human Papillomavirus 9-valent Vaccine, Recombinant</u> <u>Gardasil 9</u> | <u>Merck & Co., Inc.</u> 2015 | vitamins, amino acids, mineral salts, carbohydrates, yeast cells, <u>aluminum-containing adjuvant</u> (Amorphous Aluminum Hydroxyphosphate Sufate) | <u>aluminum</u> (Amorphous Aluminum Hydroxyphosphate Sulfate, sodium chloride, L-histidine, <u>polysorbate 80</u> , sodium borate, yeast protein, water |

16. Influenza A (H1N1) Vaccine (swine flu)

| <u>PROPER NAME</u> <u>MANUFACTURER</u> (click for package insert) | <u>PROPER NAME</u> <u>PACKAGE INSERT</u> <u>DATE</u> | <u>GROWTH MEDIUMS & PROCESS</u> <u>INGREDIENTS</u> | <u>VACCINE INGREDIENTS</u> (not in order of quantity; see package insert for quantities) |
|---|--|--|--|
| <u>Influenza A (H1N1) 2009 Monovalent Vaccine</u> -- | <u>CSL Unlimited</u> Nov. 2009 | <u>allantoic fluid of chicken eggs</u> , sucrose, beta-Propiolactone, sodium, taurodeoxycholate, phosphate buffered isotonic solution< | sodium chloride, monobasic sodium phosphate, dibasic sodium phosphate, monobasic potassium phosphate, potassium chloride, calcium chloride, sodium taurodeoxycholate, ovalbumin, neomycin sulfate, polymyxin B, beta-propiolactone |
| <u>Influenza A (H1N1) 2009 Monovalent Vaccine</u> -- | <u>ID Biomedical Corporation of Quebec</u> Jan. 2010 | <u>allantoic cavity of embryonated hens' eggs</u> , <u>formaldehyde</u> , sodium deoxycholate, phosphate-buffered saline solution | <u>thimerosal</u> , <u>egg proteins</u> , <u>formaldehyde</u> , sodium deoxycholate |
| <u>Influenza A (H1N1) 2009 Monovalent Vaccine</u> -- | <u>MedImmune LLC</u> Sep. 2009 | <u>specific pathogen-free (SPF) chicken eggs</u> , sucrose, potassium phosphate | monosodium glutamate, <u>hydrolyzed porcine gelatin</u> arginine, sucrose, dibasic potassium phosphate, monobasic potassium phosphate, gentamicin |

sulfate

Influenza A (H1N1)
2009 Monovalent
Vaccine

Sanofi Pasteur,
Inc
Sep. 2009

embryonated chicken eggs,
formaldehyde, sucrose
density solution, polyethylene
glycol p-isooctylphenyl ether
(Triton X-100), sodium
phosphate buffered isotonic
chloride solution

gelatin, formaldehyde,
polyethylene glycol p-
isooctylphenyl ether,
sucrose

17. Influenza A (H5N1) Vaccine (bird flu)

PROPER NAME

PROPER NAME

GROWTH MEDIUMS & PROCESS

VACCINE INGREDIENTS

MANUFACTURER

PACKAGE INSERT

INGREDIENTS

(not in order of quantity; see package

(click for package insert)

DATE

insert for quantities)

Influenza Virus
Vaccine (H5N1)

ID Biomedical
Corporation of
Quebec
2013

phosphate buffered saline
solution, allantoic cavity of
embryonated hen's eggs,
formaldehyde, sodium
deoxycholate, DL-a-
tocopherol, polysorbate 80

thimerosal, squalene, DL-
a-tocopherol, polysorbate
80, ovalbumin,
formaldehyde, sodium
deoxycholate

Influenza A (H1N1)
2009 Monovalent
Vaccine

Sanofi Pasteur,
Inc
2007

embryonated chicken eggs,
formaldehyde, linear sucrose
density gradient solution,
nonionic surfactant,
polyethylene glycol p-
isooctylphenyl ether (Triton X-
100), sodium phosphate
buffered isotonic sodium
chloride solution

porcine gelatin,
thimerosal, formaldehyde,
Polyethylene Glycol p-
isooctylphenyl Ether,
sucrose

18. Influenza Vaccine

(flu)

| PROPER NAME | PROPER NAME | GROWTH MEDIUMS & PROCESS | VACCINE INGREDIENTS |
|---|---|---|--|
| MANUFACTURER | PACKAGE INSERT | INGREDIENTS | (not in order of quantity; see package insert for quantities) |
| (click for package insert) | DATE | | |
| <u>Influenza Virus Vaccine</u> Afluria (Trivalent) | <u>Seqirus Pty. Ltd.</u> 2016 | beta-propiolactone, sodium taurodeoxycholate, allantoic fluid of embryonated chicken eggs , sucrose density agent, phosphate buffered isotonic solution | thimerosal (multi-dose vials only), monobasic sodium phosphate, dibasic sodium phosphate, monobasic potassium phosphate, potassium chloride, calcium chloride, sodium taurodeoxycholate, neomycin sulfate, polymyxin B, ovalbumin , mercury, sodium, chloride, beta-propiolactone, sucrose |
| <u>Influenza Virus Vaccine</u> Agriflu * | <u>Novartis Vaccines and Diagnostics, Inc.</u> Feb. 21, 2013 | kanamycin, neomycin sulfate, cetyltrimethylammonium bromide, allantoic cavity of embryonated hens' eggs | formaldehyde, egg protein, polysorbate 80, CTAB, neomycin, kanamycin |
| *This vaccine has been discontinued. | | | |
| <u>Influenza Vaccine, Adjuvanted</u> Fluad (Trivalent) | <u>Seqiris, Inc.</u> 2016-2017 | allantoic cavity of embryonated hen's eggs , MF59C.1 adjuvant (MF59), formaldehyde , cetyltrimethylammonium bromide (CTAB) | MF59C.1 adjuvant (squalene, polysorbate 80 , sorbitan trioleate, sodium citrate dihydrate, citric acid monohydrate), neomycin, kanamycin, barium, egg proteins , formaldehyde , cetyl trimethylammonium bromide (CTAB) |
| <u>Influenza Virus Vaccine</u> Fluarix Quadrivalent | <u>GlaxoSmithKline Biologicals</u> 2016-2017 | embryonated chicken eggs , sodium phosphate-buffered isotonic sodium chloride solution, sodium | octoxynol-10 (Triton X-100), a-tocopheryl hydrogen succinate, polysorbate 80 (Tween 80) |

| | | | |
|--|--|---|---|
| | | deoxycholate, formaldehyde , linear sucrose density gradient solution (contains detergent) | gentamicin sulfate, ovalbumin , hydrocortisone, formaldehyde , sodium deoxycholate |
| Influenza Virus Vaccine <hr/> Fluarix Trivalent | GlaxoSmithKline Biologicals <hr/> 2015-2016 | embryonated chicken eggs , linear sucrose density gradient solution (containing detergent), sodium deoxycholate, formaldehyde , sodium phosphate buffered isotonic sodium chloride solution | octoxynol-10 (Triton 272 X0100), a-tocopheryl hydrogen succinate, polysorbate 80 (Tween 80) hydrocortisone, gentamicin sulfate, ovalbumin, formaldehyde , sodium deoxycholate |
| Influenza Vaccine <hr/> Flublok (Trivalent) | Protein Sciences Corporation <hr/> 2016-2017 | HA insect cell (fall armyworm, <i>Spodoptera frugiperda</i>) proteins , lipids, vitamins, amino acids, mineral salts, Triton X-100 | sodium chloride, monobasic sodium phosphate, dibasic sodium phosphate, polysorbate 20 (Tween 20) host cell proteins , baculovirus, Triton X-100, host cell DNA |
| Influenza Vaccine <hr/> Flucelvax (Quadrivalent) | Seqiris, Inc. <hr/> May 23, 2016 | Madin Darby Canine Kidney (MDCK) cells , B-propiolactone, cetyltrimethylammonium bromide, phosphate buffered saline | MDCK cell protein , protein other than HA, MDCK cell DNA , polysorbate 80 , cetyltrimethylammonium bromide, B-propiolactone |
| Influenza Virus Vaccine <hr/> Flucelvax (Trivalent) | Seqiris, Inc. <hr/> Apr. 2016 | Madin Darby Canine Kidney (MDCK) cells , B-propiolactone, cetyltrimethylammonium bromide | MDCK cell protein , other cell proteins, MDCK cell DNA , polysorbate 80 , cetyltrimethylammonium bromide, B-propiolactone |
| Influenza Virus Vaccine <hr/> FluLaval (Quadrivalent) | ID Biomedical Corporation of Quebec <hr/> 2016-2017 | allantoic cavity of embryonated hens' eggs , formaldehyde , sodium deoxycholate | thimerosal , ovalbumin , formaldehyde , sodium deoxycholate, a-tocopheryl hydrogen succinate, polysorbate 80 |
| Influenza Virus Vaccine | ID Biomedical Corporation of | allantoic cavity of embryonated hens' eggs , | phosphate-buffered saline solution, thimerosal (multi- |

| | | | |
|---|---|--|---|
| <u>FluLaval (Trivalent)</u> | <u>Quebec</u> 2015-2016 | <u>formaldehyde</u> , sodium deoxycholate | dose vaccine only), <u>ovalbumin</u> , <u>formaldehyde</u> , sodium deoxycholate, a-tocopheryl hydrogen succinate, <u>polysorbate 80</u> |
| <u>Influenza Virus Vaccine Live, Intranasal</u> <u>FluMist Quadrivalent</u> | <u>MedImmune, LLC</u> 2016-2017 | <u>SPF (specific pathogen-free) eggs</u> , stabilizing buffer, sucrose, potassium phosphate | monosodium glutamate, <u>hydrolyzed porcine gelatin</u> , arginine, sucrose, dibasic potassium phosphate, monobasic potassium phosphate, <u>ovalbumin</u> , gentamicin sulfate, ethylenediaminetetraacetic acid (EDTA) |
| <u>Influenza Virus Vaccine</u> <u>Fluvirin</u> | <u>Sequiris Vaccines, Ltd.</u> 2016-2017 | <u>allantoic cavity of embryonated hens' eggs</u> , neomycin, polymyxin, betapropiolactone, nonylphenol ethoxylate | phosphate-buffered saline <u>thimerosal</u> , <u>egg proteins</u> , polymyxin, neomycin, betapropiolactone, nonylphenol ethoxylate |
| <u>Influenza Virus Vaccine</u> <u>Fluzone (Quadrivalent): Standard, High Dose, & Intradermal</u> | <u>Sanofi Pasteur, Inc.</u> 2016-2017 | <u>embryonated chicken eggs</u> , Octylphenol Ethoxylate (Triton X-100), sodium phosphate-buffered isotonic sodium chloride solution, <u>formaldehyde</u> , linear sucrose density gradient solution | <u>formaldehyde</u> , octylphenol ethoxylate (Triton X-100), sodium phosphate-buffered isotonic sodium chloride solution, gelatin (standard formulation only), <u>thimerosal</u> (standard dosage multi-dose vial only) |

19. Japanese Encephalitis Vaccine

| <u>PROPER NAME</u> | <u>PROPER NAME</u> | <u>GROWTH MEDIUMS & PROCESS</u> | <u>VACCINE INGREDIENTS</u> |
|--|--------------------------------------|---|---|
| <u>MANUFACTURER</u> (click for package insert) | <u>PACKAGE INSERT</u> <u>DATE</u> | <u>INGREDIENTS</u> | (not in order of quantity; see package insert for quantities) |
| Japanese Encephalitis Vaccine, Inactivated, Adsorbed | <u>Intercell Biomedical</u> 2016 | <u>Vero cells</u> , protamine sulfate, <u>formaldehyde</u> , aluminum hydroxide | <u>formaldehyde</u> , bovine serum albumin, host cell DNA, sodium metabisulphite, <u>host cell proteins</u> , protamine |

Ixiaro

sulphate

Japanese
Encephalitis
Vaccine,
Inactivated

JE-Vax*

***This vaccine has
been
discontinued.**

Research
Foundation for
Microbial
Diseases of
Osaka University
Dec. 2005

mice (brains are inoculated
with the virus), phosphate-
buffered saline,
formaldehyde, 40% w/v
sucrose

thimerosal, Sterile Water
for Injection, gelatin,
formaldehyde, v/v
Polysorbate 80, mouse
serum protein

20. Measles Vaccine

PROPER NAME

MANUFACTURER

(click for package insert)

PROPER NAME

PACKAGE INSERT

DATE

GROWTH MEDIUMS & PROCESS

INGREDIENTS

VACCINE INGREDIENTS

(not in order of quantity; see package
insert for quantities)

Measles Virus
Vaccine, Live

Attenuvax*

***This vaccine has
been
discontinued.**

Merck &Co., Inc
Feb. 2006

chick embryo cell culture,
buffered salt solution,
vitamins, amino acids, fetal
bovine serum, SPGA
(sucrose, phosphate,
glutamate, human albumin),
neomycin

sorbitol, sodium
phosphate, sucrose,
sodium, chloride,
hydrolyzed gelatin, human
albumin, fetal bovine
serum, neomycin, other
buffer and media
ingredients

21. Meningococcal Vaccine (meningitis)

PROPER NAME

MANUFACTURER

(click for package insert)

PROPER NAME

PACKAGE INSERT

DATE

GROWTH MEDIUMS & PROCESS

INGREDIENTS

VACCINE INGREDIENTS

(not in order of quantity; see package
insert for quantities)

Meningococcal
Group B Vaccine
Bexsero

Novartis
Vaccines and
Diagnostics
2015

factor H binding protein
(fHbp), Outer Membrane
Vesicles (OMV), **aluminum
hydroxide**, sodium chloride,
histidine, sucrose,
Escherichia coli (*E. coli*),
deoxycholate

kanamycin

| | | | |
|--|---|--|--|
| <p>Meningococcal (Serogroups A, C, Y and W-135) Polysaccharide Diphtheria Toxoid Conjugate Vaccine</p> <p>MCV4-Menactra</p> | <p>Sanofi Pasteur Inc.</p> <hr/> <p>2014</p> | <p>Mueller Hinton agar, Watson Scherp media (containing casamino acid), formaldehyde, ammonium sulfate, modified culture medium (containing hydrolyzed casein)</p> | <p>formaldehyde, sodium phosphate buffered isotonic sodium chloride solution</p> |
| <p>Meningococcal Groups C and Y and Haemophilus b Tetanus Toxoid Conjugate Vaccine</p> <p>MenHibrix</p> | <p>GlaxoSmithKline Biologicals</p> <hr/> <p>2013</p> | <p>semi-synthetic media, formaldehyde, sucrose, saline diluent, sterile saline solution</p> | <p>Tris (trometamol)-HCL, sucrose, formaldehyde, saline diluent</p> |
| <p>Meningococcal (Groups A, C, Y, and W-135) Oligosaccharide Diphtheria CRM197 Conjugate Vaccine</p> <p>Menveo</p> | <p>Novartis Vaccines and Diagnostics, Inc.</p> <hr/> <p>Aug. 2013</p> | <p>Franz Complete medium, formaldehyde, CY medium (contains yeast extracts and amino acids), purified polysaccharides, CRM197 protein</p> | <p>formaldehyde</p> |
| <p>Meningococcal Polysaccharide Vaccine, Groups A, C, Y, W135 Combined</p> <p>Menomune-A/C/Y/W-135</p> | <p>Sanofi Pasteur Inc.</p> <hr/> <p>2016</p> | <p>Mueller Hinton casein agar, Watson Scherp casamino acid media</p> | <p>distilled water, thimerosal, polysaccharide from serogroups A, C, Y, and w-135, mercury, lactose</p> |
| <p>Meningococcal Group B Vaccine</p> <p>Trumenba</p> | <p>Wyeth Pharmaceuticals, Inc.</p> <hr/> <p>2016</p> | <p><i>E. coli</i>, defined fermentation growth media, polysorbate 80 (PS80)</p> | <p>polysorbate 80 (PS80), Al³⁺ (as AlPO₄), mM histidine buffered saline</p> |

(measles, mumps, & rubella)

| PROPER NAME | PROPER NAME | GROWTH MEDIUMS & PROCESS | VACCINE INGREDIENTS |
|---|---|--|---|
| MANUFACTURER | PACKAGE INSERT | INGREDIENTS | (not in order of quantity; see package insert for quantities) |
| (click for package insert) | DATE | | |
| <u>Measles, Mumps, and Rubella Virus Vaccine, Live</u> M-M-R-II | <u>Merck and Co., Inc.</u> Oct. 2015 | chick embryo cell culture, WI-38 human diploid lung fibroblasts , Medium 199 (containing vitamins, amino acids, fetal bovine serum , SPGA (sucrose, phosphate, glutamate, recombinant human albumin), neomycin, Minimum Essential Medium (containing vitamins, amino acids, fetal bovine serum , recombinant human albumin , neomycin), sorbitol, hydrolyzed gelatin stabilizer | sorbitol, sodium phosphate, sucrose, sodium chloride, hydrolyzed gelatin, recombinant human albumin , fetal bovine serum , other buffer and media ingredients, neomycin |
| <u>>Measles, Mumps, Rubella and Varicella Virus Vaccine Live</u> ProQuad, Refrigerator Stable Formulation and Frozen Formulation | <u>Merck and Co., Inc.</u> Oct. 2015 | chick embryo cell culture, WI-38 human diploid lung fibroblasts , MRC-5 cells , bovine serum , recombinant human albumin | sucrose, hydrolyzed gelatin, urea (refrigerator stable formulation only), sodium chloride, sorbitol, monosodium L-glutamate, sodium phosphate, recombinant human albumin , sodium bicarbonate, potassium phosphate, potassium chloride, components of MRC-5 cells (including DNA and protein), neomycin, bovine serum albumin , other buffer and media ingredients, sodium phosphate dibasic (frozen formulation only), potassium phosphate monobasic (frozen formulation only), potassium phosphate |

23. Pneumococcal Vaccine (pneumonia)

| PROPER NAME | PROPER NAME | GROWTH MEDIUMS & PROCESS | VACCINE INGREDIENTS |
|---|---|---|--|
| MANUFACTURER | PACKAGE INSERT | INGREDIENTS | (not in order of quantity; see package insert for quantities) |
| (click for package insert) | DATE | | |
| Pneumococcal 7-valent Conjugate Vaccine (Diphtheria CRM197 Protein) Pevnar* | Wyeth Pharmaceuticals Inc. <hr/> Mar. 2009 | soy peptone broth, casamino acids and yeast extract-based medium, ammonium sulfate, saccharides | aluminum (as aluminum phosphate adjuvant) |
| <p>*This vaccine has been discontinued.</p> | | | |
| Pneumococcal 13-valent Conjugate Vaccine (Diphtheria CRM197 Protein) Pevnar 13 | Wyeth Pharmaceuticals Inc. <hr/> 2016 | soy peptone broth, casamino acids and yeast extract-based medium, ammonium sulfate, CRM 197 | polysorbate 80 , succinate buffer, aluminum (as aluminum phosphate adjuvant) |
| Pneumococcal Vaccine, Polyvalent Pneumovax-23 | Merck & Co., Inc. <hr/> May 2014 | -- | isotonic saline solution, phenol |

24. Polio Vaccine

| <u>PROPER NAME</u> | <u>PROPER NAME</u> | <u>GROWTH MEDIUMS & PROCESS</u> | <u>VACCINE INGREDIENTS</u> |
|---|--------------------------------------|--|--|
| <u>MANUFACTURER</u> (click for package insert) | <u>PACKAGE INSERT</u> <u>DATE</u> | <u>INGREDIENTS</u> | (not in order of quantity; see package insert for quantities) |
| Poliovirus Vaccine Inactivated (Monkey Kidney Cell) <u>IPOL</u> | Sanofi Pasteur, SA <u>2015</u> | Vero cells, Eagle MEM modified medium, newborn calf serum, M-199 (without calf serum) | 2-phenoxyethanol, formaldehyde, neomycin, streptomycin, polymyxin B, calf bovine serum albumin |

25. Rabies Vaccine

| <u>PROPER NAME</u> | <u>PROPER NAME</u> | <u>GROWTH MEDIUMS & PROCESS</u> | <u>VACCINE INGREDIENTS</u> |
|---|---|---|---|
| <u>MANUFACTURER</u> (click for package insert) | <u>PACKAGE INSERT</u> <u>DATE</u> | <u>INGREDIENTS</u> | (not in order of quantity; see package insert for quantities) |
| Rabies Vaccine <u>IMOVAX</u> | Sanofi Pasteur, SA <u>Apr. 25, 2013</u> | MRC-5 cells, beta- propiolactone | human albumin, neomycin sulfate, phenol red indicator, beta- propiolactone |
| Rabies Vaccine <u>RabAvert</u> | Novartis Vaccines and Diagnostics <u>Nov. 2013</u> | chicken fibroblasts, synthetic cell culture medium (with added human albumin), polygeline (processed bovine gelatin), antibiotics, B- propiolactone, sucrose density-gradient, buffered polygeline, potassium glutamate | polygeline (processed bovine gelatin), human serum albumin, potassium glutamate, sodium EDTA, bovine serum, chicken protein, chicken ovalbumin, neomycin, chlortetracycline, amphotericin B, water for injection |

26. Rotavirus Vaccine

| PROPER NAME | PROPER NAME | GROWTH MEDIUMS & PROCESS | VACCINE INGREDIENTS |
|--|---|---|---|
| MANUFACTURER (click for package insert) | PACKAGE INSERT DATE | INGREDIENTS | (not in order of quantity; see package insert for quantities) |
| Rotavirus Vaccine, Live, Oral, Pentavalent <u>RotaTeq</u> | Merck & Co., Inc. <u>June 2013</u> | Vero cells , buffered stabilizer, porcine-derived materials | sucrose, sodium citrate, sodium phosphate monobasic monohydrate, sodium hydroxide, polysorbate 80 , cell culture media, fetal bovine serum , DNA for porcine circoviruses |
| Rotavirus Vaccine, Live, Oral <u>Rotarix</u> | GlaxoSmithKline Biologicals <u>2016</u> | Vero cells , porcine-derived materials , amino acids, dextran, Dulbecco's Modified Eagle Medium (sodium chloride, potassium chloride, magnesium sulfate, ferric (III) nitrate, sodium phosphate, sodium pyruvate, D-glucose, concentrated vitamin solution, L-cystine, L-tyrosine, amino acids solution, L-glutamine, calcium chloride, sodium hydrogenocarbonate, phenol red), sorbitol, sucrose | calcium carbonate, sterile water, xanthan, porcine cirrovirus type 1 |

27. Rubella Vaccine

| PROPER NAME MANUFACTURER (click for package insert) | PROPER NAME PACKAGE INSERT DATE | GROWTH MEDIUMS & PROCESS INGREDIENTS | VACCINE INGREDIENTS (not in order of quantity; see package insert for quantities) |
|---|---------------------------------------|--|---|
| Rubella Virus Vaccine Live MERUVAX II* | Merck & Co., Inc. Feb. 2006 | WI-38 human diploid lung fibroblasts, Minimum Essential Medium (MEM; buffered salt solution (vitamins, amino acids, bovine serum), human serum albumin, neomycin), sorbitol, hydrolyzed gelatin stabilizer | sorbitol, sodium phosphate, sucrose, sodium chloride, hydrolyzed gelatin, human albumin, fetal bovine serum, other buffer and media ingredients, neomycin |
| *This vaccine has been discontinued. | | | |

28. Smallpox Vaccine

| PROPER NAME MANUFACTURER (click for package insert) | PROPER NAME PACKAGE INSERT DATE | GROWTH MEDIUMS & PROCESS INGREDIENTS | VACCINE INGREDIENTS (not in order of quantity; see package insert for quantities) |
|---|---|---|--|
| Smallpox (Vaccinia) Vaccine, Live ACAM2000 | Sanofi Pasteur Biologics Co. Dec. 2015 | Vero cells, human serum albumin, sodium chloride, mannitol, neomycin, polymyxin B, Dryvax | glycerin, phenol in Water for Injection |

29. TD Vaccine (tetanus & diphtheria)

| PROPER NAME MANUFACTURER (click for package insert) | PROPER NAME PACKAGE INSERT DATE | GROWTH MEDIUMS & PROCESS INGREDIENTS | VACCINE INGREDIENTS (not in order of quantity; see package insert for quantities) |
|--|---------------------------------------|--|--|
| Tetanus and Diphtheria Toxoids Adsorbed For Adult Use DECAVAC* | Sanofi Pasteur, Inc. Mar. 2011 | Mueller and Miller medium, peptone-based medium, extract of bovine muscle tissue, formaldehyde, ammonium sulfate | thimerosal, aluminum potassium sulfate adjuvant, formaldehyde |
| *This vaccine has been | | | |

discontinued.

Tetanus and
Diphtheria Toxoids
Adsorbed For Adult
Use

TENIVAC

Sanofi Pasteur,
Ltd.
Apr. 2013

modified Mueller-Miller
casamino acid medium
(without beef heart infusion),
formaldehyde, ammonium
sulfate, modified Mueller's
growth medium, aluminum
phosphate

aluminum phosphate,
formaldehyde, sodium
chloride, water for
injection

Tetanus and
Diphtheria Toxoids,
Adsorbed

--

Mass Biologics
Feb. 2011

modified Mueller's media
(contains bovine extracts),
formaldehyde, ammonium
sulfate, aluminum phosphate

aluminum adjuvant,
formaldehyde, thimerosal

Tetanus Toxoid

--*

***This vaccine has
been
discontinued.**

Sanofi Pasteur,
Inc.
Dec. 2005

peptone-based medium,
formaldehyde, ammonium
sulfate, physiological saline
solution

thimerosal, formaldehyde

Tetanus Toxoid
Adsorbed

--*

***This vaccine has
been
discontinued.**

Sanofi Pasteur,
Inc.
July 2005

peptone-based medium
(contains extract of bovine
muscle tissue), formaldehyde,
ammonium sulfate, aluminum
potassium sulfate (alum)

thimerosal, physiological
saline solution

30. Tdap Vaccine (tetanus, diphtheria, & pertussis)

PROPER NAME

MANUFACTURER

(click for package insert)

PROPER NAME

PACKAGE INSERT

DATE

GROWTH MEDIUMS & PROCESS

INGREDIENTS

VACCINE INGREDIENTS

(not in order of quantity; see package
insert for quantities)

Tetanus Toxoid,
Reduced
Diphtheria Toxoid
and Acellular
Pertussis Vaccine,
Adsorbed

Sanofi Pasteur,
Ltd.
2015

modified Stainer-Scholte
medium (added casamino
acid, dimethyl-beta-
cyclodextrin), glutaraldehyde,
formaldehyde, aluminum
phosphate, modified Mueller-

aluminum phosphate,
formaldehyde,
glutaraldehyde, 2-
phenoxyethanol, water for
injection

Adacel

Miller casamino acid medium (without beef heart infusion), ammonium sulfate, 2-phenoxyethanol, water for injection

Tetanus Toxoid, Reduced Diphtheria Toxoid and Acellular Pertussis Vaccine, Adsorbed

GlaxoSmithKline Biologicals
2016

modified Latham medium derived from bovine casein, Fenton medium (containing bovine extract), formaldehyde, modified Stainer-Scholte liquid medium, glutaraldehyde, aluminum hydroxide

aluminum hydroxide, sodium chloride, formaldehyde, polysorbate 80 (Tween 80)

Boostrix

31. Typhoid Vaccine

PROPER NAME

PROPER NAME

GROWTH MEDIUMS & PROCESS

VACCINE INGREDIENTS

MANUFACTURER

PACKAGE INSERT

INGREDIENTS

(not in order of quantity; see package insert for quantities)

(click for package insert)

DATE

Typhoid Vi Polysaccharide Vaccine

Sanofi Pasteur SA
Mar. 2014

semi-synthetic medium, hexadecyltrimethylammonium bromide

formaldehyde, phenol, polydimethylsiloxane or fatty-acid ester-cased antifoam, isotonic phosphate buffered saline, sodium chloride, disodium phosphate, monosodium phosphate, sterile water for injection, vi polysaccharide

Typhim Vi

Typhoid Vaccine Live Oral Ty21a

Berna Biotech, Ltd.
Sep. 2013

yeast extract, casein, dextrose, and galactose, sucrose, ascorbic acid, amino acids, lactose, magnesium stearate

sucrose, ascorbic acid, amino acid mixture, lactose, magnesium stearate

Vivotif

32. Varicella Vaccine

(chickenpox)

| <u>PROPER NAME</u> | <u>PROPER NAME</u> | <u>GROWTH MEDIUMS & PROCESS</u> | <u>VACCINE INGREDIENTS</u> |
|--|---|--|---|
| <u>MANUFACTURER</u> (click for package insert) | <u>PACKAGE INSERT</u> <u>DATE</u> | <u>INGREDIENTS</u> | (not in order of quantity; see package insert for quantities) |
| <u>Varicella Virus Vaccine, Live</u> Varivax, Frozen and Refrigerated | <u>Merck & Co., Inc.</u> Dec. 2012 | human embryonic lung cell cultures, embryonic guinea pig cell cultures, WI-38 human diploid cell cultures , MRC-5 human diploid cell cultures , sucrose, phosphate, glutamate, processed gelatin, urea (refrigerated vaccine only) | sucrose, hydrolyzed gelatin, urea (refrigerated vaccine only), sodium chloride, monosodium L-glutamate, sodium phosphate dibasic, potassium phosphate monobasic, potassium chloride, components of MRC-5 cells (DNA, protein), neomycin, bovine calf serum , sodium phosphate monobasic, EDTA, fetal bovine serum |

33. Yellow Fever Vaccine

| <u>PROPER NAME</u> | <u>PROPER NAME</u> | <u>GROWTH MEDIUMS & PROCESS</u> | <u>VACCINE INGREDIENTS</u> |
|---|--|---|---|
| <u>MANUFACTURER</u> (click for package insert) | <u>PACKAGE INSERT</u> <u>DATE</u> | <u>INGREDIENTS</u> | (not in order of quantity; see package insert for quantities) |
| <u>Yellow Fever Vaccine</u> YF-Vax | <u>Sanofi Pasteur, Inc.</u> June 2016 | living avian leukosis virus-free (ALV-free) chicken embryos | sorbitol, gelatin, sterile diluent (sodium chloride) |

34. Zoster Vaccine

(shingles)

| PROPER NAME | PROPER NAME | GROWTH MEDIUMS & PROCESS | VACCINE INGREDIENTS |
|--|-------------------|--------------------------|---|
| MANUFACTURER | PACKAGE INSERT | INGREDIENTS | (not in order of quantity; see package insert for quantities) |
| (click for package insert) | DATE | | |
| Zoster Vaccine, Live | Merck & Co., Inc. | -- | sucrose, hydrolyzed porcine gelatin, sodium chloride, monosodium L-glutamate, sodium phosphate dibasic, potassium phosphate monobasic, potassium chloride, components of MRC-5 cells (DNA, protein), neomycin, bovine calf serum, urea (refrigerator stable only) |
| Zostavax, Frozen and Refrigerator Stable | Feb. 2016 | | |



II. GLOSSARY AND DETAILS FOR INGREDIENTS

Possible Ingredients

Product (Ingredients depend on which modification is used.)

2-Phenoxyethanol

2-Phenoxyethanol is a glycol ether used as a preservative in vaccines.

Aluminum

Aluminum is used in vaccines as an adjuvant, which helps the vaccine work more quickly and more powerfully.

Bovine casein

A casein is a family of phosphoproteins commonly found in mammalian milk. 80% of the proteins in cow's milk are casein.

Bovine serum

Bovine "[s]erum is the centrifuged fluid component of either clotted or defibrinated whole blood. Bovine serum comes from blood taken from domestic cattle. Serum from other animals is also collected and processed but bovine serum is processed in the greatest volume."

"Bovine serum is a by-product of the meat industry. Bovine blood may be taken at the time of slaughter, from adult cattle, calves, very young calves or (when cows that are slaughtered are subsequently found to be pregnant) from bovine fetuses. It is also obtained from what are called 'donor' animals, which give blood more than once.

Blood is available from bovine fetuses only because a proportion of female animals that are slaughtered for meat for human consumption are found (often unexpectedly) to be pregnant.

Blood is available from very young calves because calves, especially males from dairy breeds, are often slaughtered soon, but not necessarily immediately, after birth because raising them will not be economically beneficial. Older animals are, of course, slaughtered for meat.

Only donor cattle are raised for the purpose of blood donation. Donor cattle are invariably kept in specialized, controlled herds. Blood is taken from these animals in a very similar way to that used for human blood donation.

Irrespective of whether blood is taken at slaughter or from donors, the age of the animal is an important consideration because it impacts the characteristics of the serum.

Bovine serum is categorized according to the age of the animal from which the blood was collected as follows:

- 'Fetal bovine serum' comes from fetuses
 - 'Newborn calf serum' comes from calves less than three weeks old
 - 'Calf serum' comes from calves aged between three weeks and 12 months
 - 'Adult bovine serum' comes from cattle older than 12 months
- Serum processed from donor blood is termed 'donor bovine serum'. Donor animals can be up to three years old."

| | |
|-----------------------------------|---|
| Chicken Eggs | Viruses can be grown in chicken eggs before being used in vaccinations. |
| CMRL-1969 | L-alanine, L-arginine (free base) ^b , L-aspartic acid, L-cysteine-HCL, L-cystine, L-glutamic acid-H ₂ O, L-glutamine, glycine, L-histidine (free base) ^b , L-hydroxyproline, L-isoleucine, L-leucine, L-lysine, L-methionine, L-phenylalanine, L-proline, L-serine, L-threonine, L-tryptophan, L-tyrosine, L-valine, <i>p</i> -aminobenzoic acid, ascorbic acid, <i>d</i> -biotin, calcium pantothenate, cholesterol, choline chloride, ethanol, folic acid, glutathione, <i>i</i> -inositol, menadione, nicotinamide, nicotinic acid, pyridoxal-HCL, pyridoxine-HCL, riboflavine, riboflavine-5-phosphate, sodium acetate-3H ₂ O, thiamine-HCL, Tween 80, vitamin A acetate, vitamin D (calciferol), vitamin E (α-tocopherol phosphate), D-glucose, phenol red, sodium chloride, potassium chloride, calcium chloride, magnesium sulphate heptahydrate, sodium phosphate dibasic, sodium dihydrogen phosphate, monopotassium phosphate, sodium bicarbonate, iron nitrate nonahydrate |
| Dulbecco's Modified Eagle's Serum | glucose, sodium bicarbonate, L-glutamine, pyridoxine HCl, pyridocal HCl, folic acid, phenol red, HEPES (2-[4-(2-hydroxyethyl)piperazin-1-yl]ethanesulfonic acid), L-methionine, L-cystine, sodium phosphate mono-basic, sodium pyruvate, vitamins |
| Earle's Balanced Salt Medium | inorganic salts, D-glucose, phenol red, calcium, magnesium salts |
| Fenton Medium | bovine extract |
| Formaldehyde | Formaldehyde is used in vaccines to inactivate the virus so the person being inoculated does not contract the disease. |
| Human albumin | Human albumin is a blood plasma protein produced in the liver that, among other functions, transports hormones, fatty acids, and other compounds, and buffers pH. |
| Insect Cells | Cabbage moth and fall armyworm cells are used to grow viruses for |

vaccines.

Latham
Medium

bovine casein

MDCK (Madin-
Carby canine
kidney cells)

cells from normal female adult Cocker Spaniel (harvested in 1958 by SH Madin and NB Darby), EMEM(EBSS) (Eagle's Minimum Essential Medium with Earle's Balanced Salt Solution), glutamine, non essential amino acids, foetal bovine serum

Mouse Brains

Live mice brains are inoculated with the Japanese encephalitis virus to grow the virus used in the vaccine.

MRC-5

Medical Research Council 5, human diploid cells (cells containing two sets of chromosomes) derived from the normal lung tissues of a 14-week-old male fetus aborted for "psychiatric reasons" in 1966 in the United Kingdom, Eagle's Basal Medium in Earle's balanced salt solution with bovine serum.

Mueller Hinton
Agar

beef extract, acid hydrolysate of casein, starch, agar

Mueller-Miller
Medium

glucose, sodium chloride, sodium phosphate dibasic, monopotassium, phosphate, magnesium sulfate hydrate, ferrous sulfate heptahydrate, cystine hydrochloride, tyrosine hydrochloride, urasil hydrochloride, Ca-pantothenate in ethanol, thiamine in ethanol, pyridoxin-hydrochloride in ethanol, riboflavin in ethanol, biotin in ethanol, sodium hydroxide, beef heart infusion (de-fatted beef heart and distilled water), casein solution

Polysorbate 80

Also called Tween 80, Alkest 80, or Canarcel 80 (brand names). Polysorbate 80 is used as an excipient (something to basically thicken a vaccine for proper dosing) and an emulsifier (something to bond the ingredients).

Porcine gelatin

Gelatin is used to protect viruses in vaccines from freeze-drying or heat and to stabilize vaccines so they stay stable.

Stainer-Scholte
Liquid Medium

tris hydrochloride, tris base, glutamate (monosodium salt), proline, salt, monopotassium phosphate, potassium chloride, magnesium chloride, calcium chloride, ferrous sulfate, ascorbic acid, niacin, glutathione

Thimerosal

Thimerosal is an organomercury compound used as a preservative.

Vero Cells
(African Green
Monkey Cells)

cells derived from the kidney of a normal, adult African Green monkey in 1962 by Y. Yasumura and Y. Kawakita

WI-38 human
diploid cells

Winstar Institute 38, human diploid lung fibroblasts derived from the lung tissues of a female fetus aborted because the family felt they had too many children in 1964 in the United States



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History



**Pro & Con
Quotes**



**Pro & Con
Arguments**

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