

## Which vaccines contain human protein and DNA?

The information in this table is drawn from vaccine package inserts downloaded from the FDA website. The Vaccine Ingredients Calculator, following the lead of the package inserts, treats each source of human protein and DNA as a distinct ingredient.

Vaccine	Fetal cell line Wistar RA 27/3	Fetal cell line WI-38	Fetal cell line MRC-5	Human albumin (from human blood)	Genetically engineered human albumin	Human DNA
MMR (M-M-R II)	✓	✓			✓	
Chicken Pox (Varivax)		✓	✓			✓
Chicken Pox and MMR (ProQuad)	✓	✓	✓	✓		✓
Hepatitis-A (Havrix)			✓			
Hepatitis-A (Vaqta)			✓			✓
DTaP, Hib, Polio (Pentacel)			✓			
Rabies (IMOVAX)			✓			
Rabies (RabAvert)				✓		

A recent CBS News Investigates article quotes a former senior scientist at a pharmaceutical firm who claims that human tissue is currently used in 23 vaccines; however, we adhere strictly to the vaccine package inserts from the FDA as our ingredient data source and cannot confirm nor deny this claim.

[http://www.cbsnews.com/8301-31727\\_162-20049118-10391695.html](http://www.cbsnews.com/8301-31727_162-20049118-10391695.html) ...link to article

## Where did the human protein and DNA come from?

There are three main sources of human protein in vaccines: (1) fetal cell lines, (2) human albumin derived from human blood and (3) human albumin genetically engineered from yeast.

The human DNA in vaccines comes from the MRC-5 fetal cell line (see below).

### *Human Protein from Fetal Cell Lines*

- The **MRC-5 cell line** was developed in September 1966 from lung tissue taken from a 14 week fetus aborted for psychiatric reasons from a 27 year old physically healthy woman.
- The **WI-38 human diploid cell line** was derived by L. Hayflick from normal embryonic (3-month gestation) lung tissue of a female.
- The rubella vaccine currently used in the United States and in most countries was developed after an American researcher at the Wistar Institute cultured rubella virus from a fetus aborted because the mother was infected with rubella. This vaccine is called **RA 27/3** because the rubella virus was isolated from the 27th aborted fetus sent to the Wistar Institute in the 1964 rubella outbreak.
- This article, while incomplete regarding the sources of human protein/DNA and the vaccines in which they are found, attempts to explain why some vaccines are grown in cell cultures that were originally obtained from human fetuses.  
<http://www.immunizationinfo.org/issues/vaccine-components/human-fetal-links-some-vaccines>

### *Genetically Engineered Human Albumin*

- Currently (as of April 2011), only the MMR vaccine contains genetically engineered human protein, which is produced under the brand name Recombumin and referred to as "recombinant human albumin" in the package insert.  
<http://www.immunizationinfo.org/issues/vaccine-components/human-fetal-links-some-vaccines>

### *Human albumin derived from human blood*

- The package inserts do not contain any information about where the human blood is sourced from.
- The National Hemophilia Foundation is a good source of information about blood supply and product safety.  
<http://www.hemophilia.org/NHFWeb/MainPgs/MainNHF.aspx?menuid=3&contentid=37&rptname=bloodsafety>

# Vaccine Excipient & Media Summary

## Excipients Included in U.S. Vaccines, by Vaccine

This table includes not only vaccine ingredients (e.g., adjuvants and preservatives), but also substances used during the manufacturing process, including vaccine-production media, that are removed from the final product and present only in trace quantities. In addition to the substances listed, most vaccines contain Sodium Chloride (table salt).

**Last Updated February 2012**

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. If in doubt, check the manufacturer's package insert.

### Vaccine

#### Contains

#### Source: Manufacturer's P.I. Dated

#### Adenovirus

sucrose, D-mannose, D-fructose, dextrose, potassium phosphate, plasdane 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, fetal bovine serum, sodium bicarbonate, human-diploid fibroblast cell cultures (WI-38), Dulbecco's Modified Eagle's Medium

March, 2011

#### Anthrax (Biothrax)

aluminum hydroxide, benzethonium chloride, formaldehyde, amino acids, vitamins, inorganic salts and sugars

December, 2008

#### DT (Sanofi)

aluminum potassium sulfate, peptone, bovine extract, formaldehyde, thimerosal (trace), modified Mueller and Miller medium

December, 2005

#### DTaP (Daptacel)

aluminum phosphate, formaldehyde, glutaraldehyde, 2-Phenoxyethanol, Stainer-Scholte medium, modified Mueller's growth medium, modified Mueller-Miller casamino acid medium (without beef heart infusion)

July, 2011

#### DTaP (Infanrix)

formaldehyde, glutaraldehyde, aluminum hydroxide, polysorbate 80, Fenton medium (containing bovine extract), modified Latham medium (derived from bovine casein), modified Stainer-Scholte liquid medium

November, 2011

#### DTaP (Tripedia)

sodium phosphate, peptone, bovine extract (U.S. sourced), formaldehyde, ammonium sulfate, , aluminum potassium sulfate, thimerosal (trace), gelatin, polysorbate 80 (Tween 80), modified Mueller and Miller medium, modified Stainer-Scholte medium

December, 2005

#### DTaP-IPV (Kinrix)

formaldehyde, glutaraldehyde, aluminum hydroxide, Vero (monkey kidney) cells, calf serum, lactalbumin hydrolysate, polysorbate 80, neomycin sulfate, polymyxin B, Fenton medium (containing bovine extract), modified Latham medium (derived from bovine casein), modified Stainer-Scholte liquid medium

November, 2011

#### DTaP-HepB-IPV (Pediatrix)

formaldehyde, glutaraldehyde, aluminum hydroxide, aluminum phosphate, lactalbumin hydrolysate, polysorbate 80, neomycin sulfate, polymyxin B, yeast protein, calf serum, Fenton medium (containing bovine extract), modified Latham medium (derived from bovine casein), modified Stainer-Scholte liquid medium, Vero (monkey kidney) cells

November, 2011

#### DTaP-IPV/Hib (Pentacel)

aluminum phosphate, polysorbate 80, formaldehyde, gutaraldehyde, bovine serum albumin, 2-phenoxethanol, neomycin, polymyxin B sulfate, Mueller's Growth Medium, Mueller-Miller casamino acid medium (without beef heart infusion), Stainer-Scholte medium

(modified by the addition of casamino acids and dimethyl-beta-cyclodextrin), MRC-5 (human diploid) cells, CMRL 1969 medium (supplemented with calf serum).

July, 2011

**Hib/Hep B (Comvax)**

yeast (vaccine contains no detectable yeast DNA), nicotinamide adenine dinucleotide, hemin chloride, soy peptone, dextrose, mineral salts, amino acids, formaldehyde, potassium aluminum sulfate, amorphous aluminum hydroxyphosphate sulfate, sodium borate

December, 2010

**Hep A (Havrix)**

aluminum hydroxide, amino acid supplement, polysorbate 20, formalin, neomycin sulfate, MRC-5 cellular proteins

July, 2011

**Hep A (Vaqta)**

amorphous aluminum hydroxyphosphate sulfate, bovine albumin, formaldehyde, neomycin, sodium borate, MRC-5 (human diploid) cells

December, 2010

**Hep B (Engerix-B)**

aluminum hydroxide, yeast protein, phosphate buffers.

October, 2011

**Hep B (Recombivax)**

yeast protein, soy peptone, dextrose, amino acids, mineral salts, potassium aluminum sulfate, amorphous aluminum hydroxyphosphate sulfate, formaldehyde.

July, 2011

**Hep A/Hep B (Twinrix)**

formalin, yeast protein, aluminum phosphate, aluminum hydroxide, amino acids, phosphate buffer, polysorbate 20, neomycin sulfate, MRC-5 human diploid cells

November, 2011

**Human Papillomavirus (HPV) (Cerverix)**

vitamins, amino acids, lipids, mineral salts, aluminum hydroxide, sodium dihydrogen phosphate dehydrate, insect cell and viral protein..

July, 2011

**Human Papillomavirus (HPV) (Gardasil)**

yeast protein, vitamins, amino acids, mineral salts, carbohydrates, amorphous aluminum hydroxyphosphate sulfate, L-histidine, polysorbate 80, sodium borate.

March, 2011

**Influenza (Afluria)**

beta-propiolactone, thimerosal (multi-dose vials only), monobasic sodium phosphate, dibasic sodium phosphate, monobasic potassium phosphate, potassium chloride, calcium chloride, sodium taurodeoxycholate, neomycin sulfate, polymyxin B, egg protein

November 2011

**Influenza (Fluarix)**

sodium deoxycholate, formaldehyde, octoxynol-10 (Triton X-100),  $\alpha$ -tocopheryl hydrogen succinate, polysorbate 80 (Tween 80), hydrocortisone, gentamicin sulfate, ovalbumin

April, 2011

**Influenza (Fluvirin)**

nonylphenol ethoxylate, thimerosal (multidose vial-trace only in prefilled syringe), polymyxin, neomycin, beta-propiolactone, egg proteins

May, 2011

**Influenza (Flulaval)**

thimerosal,  $\alpha$ -tocopheryl hydrogen succinate, polysorbate 80, formaldehyde, sodium deoxycholate, ovalbumin  
December, 2011

**Influenza (Fluzone: Standard, High-Dose, & Intradermal)**

formaldehyde, octylphenol ethoxylate (Triton X-100), sodium phosphate, gelatin (standard formulation only), thimerosal (multi-dose vial only), egg protein  
May, 2011

**Influenza (FluMist)**

ethylene diamine tetraacetic acid (EDTA), monosodium glutamate, hydrolyzed porcine gelatin, arginine, sucrose, dibasic potassium phosphate, monobasic potassium phosphate, gentamicin sulfate, egg protein  
May, 2011

**Meningococcal (MCV4- Menactra)**

formaldehyde, phosphate buffers, Mueller Hinton agar, Watson Scherp media, Modified Mueller and Miller medium  
November, 2011

**Meningococcal (MCV4- Menveo)**

formaldehyde, amino acids, yeast extract, Franz complete medium  
March, 2011

**Meningococcal (MPSV4- Menomune)**

thimerosal (multi-dose vial only), lactose, Mueller Hinton agar, Watson Scherp media  
January, 2009

**MMR (MMR-II)**

vitamins, amino acids, fetal bovine serum, sucrose, sodium phosphate, glutamate, recombinant human albumin, neomycin, sorbitol, hydrolyzed gelatin, chick embryo cell culture, WI-38 human diploid lung fibroblasts  
December, 2010

**MMRV (ProQuad)**

sucrose, hydrolyzed gelatin, sorbitol, monosodium L-glutamate, sodium phosphate dibasic, human albumin, sodium bicarbonate, potassium phosphate monobasic, potassium chloride, potassium phosphate dibasic, neomycin, bovine calf serum, chick embryo cell culture, WI-38 human diploid lung fibroblasts, MRC-5 cells  
August, 2011

**Pneumococcal (PCV13 – Prevnar 13)**

casamino acids, yeast, ammonium sulfate, Polysorbate 80, succinate buffer, aluminum phosphate  
January, 2012

**Pneumococcal (PPSV-23 – Pneumovax)**

phenol.  
October, 2011

**Polio (IPV – Ipol)**

2-phenoxyethanol, formaldehyde, neomycin, streptomycin, polymyxin B, monkey kidney cells, Eagle MEM modified medium, calf serum protein  
December, 2005

**Rabies (Imovax)**

albumin, neomycin sulfate, phenol, MRC-5 human diploid cells  
December, 2005

**Rabies (RabAvert)**

$\beta$ -propiolactone, potassium glutamate, chicken protein, ovalbumin, neomycin, chlortetracycline, amphotericin B, human serum albumin, polygeline (processed bovine 14 gelatin)

October, 2006

#### **Rotavirus (RotaTeq)**

sucrose, sodium citrate, sodium phosphate monobasic monohydrate, sodium hydroxide, polysorbate 80, cell culture media, fetal bovine serum, vero cells [*DNA from porcine circoviruses (PCV) 1 and 2 has been detected in RotaTeq. PCV-1 and PCV-2 are not known to cause disease in humans.*]

September, 2011

#### **Rotavirus (Rotarix)**

amino acids, dextran, , sorbitol, sucrose, calcium carbonate, xanthan, Dulbecco's Modified Eagle Medium (DMEM) [*Porcine circovirus type 1 (PCV-1) is present in Rotarix. PCV-1 is not known to cause disease in humans.*]

February, 2011

#### **Smallpox (Vaccinia – ACAM2000)**

human serum albumin, mannitol, neomycin, glycerin, polymyxin B, phenol, Vero cells

August, 2007

#### **Td (Decavac)**

aluminum potassium sulfate, peptone, formaldehyde, thimerosal, bovine muscle tissue (US sourced), Mueller and Miller medium, March, 2011

#### **Td (Tenivac)**

aluminum phosphate, formaldehyde, modified Mueller-Miller casamino acid medium without beef heart infusion

December, 2010

#### **Td (Mass Biologics)**

aluminum phosphate, formaldehyde, thimerosal (trace), ammonium phosphate, modified Mueller's media (containing bovine extracts)

February, 2011

#### **Tdap (Adacel)**

aluminum phosphate, formaldehyde, glutaraldehyde, 2-phenoxyethanol, ammonium sulfate, Mueller's growth medium, Mueller-Miller casamino acid medium (without beef heart infusion)

December, 2010

#### **Tdap (Boostrix)**

formaldehyde, glutaraldehyde, aluminum hydroxide, polysorbate 80 (Tween 80), Latham medium derived from bovine casein, Fenton medium containing a bovine extract, Stainer-Scholte liquid medium

January, 2012

#### **Varicella (Varivax)**

sucrose, phosphate, glutamate, gelatin, monosodium L-glutamate, sodium phosphate dibasic, potassium phosphate monobasic, potassium chloride, sodium phosphate monobasic, EDTA, residual components of MRC-5 cells including DNA and protein, neomycin, fetal bovine serum, human diploid cell cultures

August, 2011

#### **Zoster (Shingles – Zostavax)**

sucrose, hydrolyzed porcine gelatin, monosodium L-glutamate, sodium phosphate dibasic, potassium phosphate monobasic, neomycin, potassium chloride, residual components of MRC-5 cells including DNA and protein, bovine calf serum

June, 2011

A table listing vaccine excipients and media by excipient can be found in:

Grabenstein JD. *ImmunoFacts: Vaccines and Immunologic Drugs* – 2012 (37<sup>th</sup> revision). St Louis, MO: Wolters Kluwer Health, 2011.

Ingredients provided by: <http://www.cdc.gov/vaccines/pubs/pinkbook/downloads/appendices/b/excipient-table-2.pdf>