GLOSSARY AND DETAILS FOR INGREDIENTS

Product	Possible Ingredients (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 categorised 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-H20, 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, *p*-aminobenzoic acid, ascorbic acid, *d*-biotin, calcium pantothenate, cholesterol, choline chloride, ethanol, folic acid, glutathione, *i*-inositol, menadione, nicotinamide, nicotinic acid, pyridoxal-HCL, pyridoxine-HCL, riboflavine, riboflavine-5-phosphate, sodium acetate-3H2O, thiamine-HCL, Tween 80, vitamin A acetate, vitamin D (calciferol), vitamin E (a-tocopherol phosphate), D-glucose, phenol red, sodium chloride, potassium chloride, calcium chloride, magnesium culphate 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 heptaphydrate, 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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