



ALUMINIUM

VACCINE ADJUVANTS

KEY POINTS

- Adjuvants improve the body's immune response to a vaccine.
- Aluminium has a record of over 70 years as a safe vaccine adjuvant.
- International experts and medical institutions conclude that aluminium adjuvants are safe and effective components in vaccines, which protect individuals and populations from serious diseases.

ADJUVANTS IN VACCINES

An adjuvant is a substance that is added to a vaccine to improve the immune response to the vaccine. This can reduce the amount of the antigen (the substance that produces an immune response to the disease) required in the vaccine. It may also reduce the number of doses a person needs to gain immunity. In addition, adjuvants can provide immunity to a disease in people with weakened immune systems, such as elderly people or those with some medical conditions, who might otherwise remain vulnerable to the disease.

Adjuvants are made of several different substances and are used in a manner that is specific to each vaccine. Only some vaccines contain adjuvants.

In the US adjuvants are used in the vaccines for hepatitis A, hepatitis B, DTaP (diphtheria–tetanus–pertussis) and in some influenza (flu) vaccines. Vaccines for measles, mumps, rubella, chickenpox, rotavirus, polio and seasonal influenza (as opposed to pandemic influenza) do not contain added adjuvants.

ALUMINIUM ADJUVANTS

Aluminium adjuvants are composed of aluminium salts – these are compounds of aluminium rather than the metal form of aluminium. They are used in the vaccines for DTaP, hepatitis B, human papilloma virus (HPV), and pneumococcal disease, as well as some flu vaccines.

Only a very small amount of aluminium is in a vaccine; in the US the amount of aluminium permitted in an individual vaccine dose is 0.85 milligrams. However, the amount of aluminium in the hepatitis A vaccine an infant receives is only 0.25 mg. To understand this amount, consider that a milligram is one-thousandth of a gram and a gram is equivalent to one-fifth of a teaspoon.

THE BODY'S RESPONSE TO ALUMINIUM ADJUVANTS

Aluminium in vaccine adjuvants enters the bloodstream and almost all of it is eliminated by the kidneys within a short time.

Within 24 hours about half of the aluminium in the bloodstream is eliminated and more than three-quarters is eliminated within two weeks. The body has a very good ability to eliminate aluminium.

Experts agree that aluminium in vaccines does not cause neurological conditions, such as autism. It can cause local reactions at the injection site – commonly swelling and pain – which are mild and temporary. Some people may experience an allergic reaction to one or more components of a vaccine.

ALUMINIUM ADJUVANTS ARE TESTED BEFORE BEING APPROVED FOR USE

All vaccines must be authorized, or licensed, for use in a country or region (such as US, Canada or Europe), following an evaluation of the safety and effectiveness of the vaccine. This evaluation includes clinical trials of all component of a vaccine, including the adjuvant.

There is ongoing monitoring of vaccine safety, as with all drugs. This process gathers and analyses information from adverse reactions associated with a drug to build greater understanding of the possible effects.

INACCURATE CLAIMS OF HEALTH THREATS FROM ALUMINIUM ADJUVANTS

Aluminium compounds have a long safety record as vaccine adjuvants, as they have been used for this purpose for 70 years. There is a low tolerance for risks of adverse impacts of vaccines, since they are given to healthy people to protect against infectious diseases.

Despite the long period over which millions of vaccines have been given safely to people, some claims have been made that aluminium adjuvants in some vaccines cause autism or other neurological conditions in children. These claims are inaccurate. In fact they have been investigated many times and experts have found that the research on which they were based was flawed.

The *Global Advisory Committee on Vaccine Safety* (GACVS), a committee of the *World Health Organization* (WHO), has completed several investigations of claims about aluminium adjuvants. In 2012 the GACSV noted that papers claiming that aluminium in vaccines caused autism or autism-spectrum disorders in children were seriously flawed.

Another article which made a similar claim about aluminium in vaccines was subsequently retracted by the journal that had initially published it. It was critiqued by medical researchers as being misleading and for making claims that were not justified by the findings.

ADDITIONAL RESOURCES

INTERNATIONAL SCIENTIFIC & REGULATORY INSTITUTIONS

World Health Organization (WHO)

Statement from the *Global Advisory Committee on Vaccine Safety* on aluminium-containing vaccines

www.who.int/vaccine_safety/committee/topics/aluminium/statement_112002/en/

Global Advisory Committee on Vaccine Safety, June 2012

www.who.int/wer/2012/wer8730.pdf?ua=1

Q&A about macrophagic myofasciitis (MMF)

www.who.int/vaccine_safety/committee/topics/aluminium/questions/en/

Q&A on immunization and vaccine safety

www.who.int/features/qa/84/en/

Vaccine Safety Net

www.who.int/vaccine_safety/initiative/communication/network/vaccine_safety_websites/en/

Centers for Disease Control and Prevention (US)

www.cdc.gov/vaccinesafety/concerns/adjuvants.html

European Medicines Agency

www.ema.europa.eu/docs/en_GB/document_library/Scientific_guideline/2009/09/WC500003809.pdf

National Institutes of Health

www.niaid.nih.gov/research/vaccine-adjuvants

US Food & Drug Administration

www.fda.gov/biologicsbloodvaccines/safetyavailability/vaccinesafety/ucm187810.htm

Health Canada

www.hc-sc.gc.ca/dhp-mps/brgtherap/activit/fs-fi/vaccin-reg-eng.php

Government of Canada Immunization Guide

www.canada.ca/en/public-health/services/publications/healthy-living/canadian-immunization-guide-part-2-vaccine-safety/page-2-vaccine-safety.html

PUBLIC HEALTH & MEDICAL INSTITUTIONS

Canadian Public Health Association

resources.cpha.ca/immunize.ca/data/1695e.pdf

Children's Hospital of Philadelphia

www.chop.edu/centers-programs/vaccine-education-center/vaccine-ingredients/aluminum

London School of Hygiene and Tropical Medicine Vaccine Confidence Project

www.vaccineconfidence.org/

SCIENTIFIC LITERATURE

Di Pasquale et al., (2015). "Vaccine Adjuvants: from 1920 to 2015 and Beyond". *Vaccines* (Basel). 2015 Jun; 3(2): 320–343.

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4494348/>

LaSalle, G. (2018). "When the answer to vaccines is "No"". *J Fam Pract*. 2018 June;67(6):348-351,359-364

www.mdedge.com/sites/default/files/Document/May-2018/JFP06706348.PDF

BLOGS

Vaxplanations: *Is the aluminium in vaccines a dangerous amount? Is it toxic?*

www.vaxplanations.wordpress.com/2014/04/11/is-the-aluminium-in-vaccines-a-dangerous-amount-is-it-toxic/

Know Science: *The Truth About Vaccines*

knowscience.org/2015/07/02/the-truth-about-vaccines/

Bad Science Debunked: *Flu Vaccine: The Aluminum Lining*

www.badsciencedebunked.com/2014/10/07/flu-vaccine-the-aluminum-lining/

Harpocrates Speaks: *Demystifying Vaccine Ingredients: Aluminum*

www.harpocratesspeaks.com/2015/02/demystifying-vaccine-ingredients-aluminum.html

Skeptical Raptor: *Aluminum adjuvant in vaccines – let's go cherry picking*

www.skepticalraptor.com/skepticalraptorblog.php/aluminum-adjuvant-vaccines-cherry-picking/

Science Blogs: *Another "Frontiers In" journal steps in it*

www.scienceblogs.com/aetiology/2015/08/04/another-frontiers-in-journal-steps-in-it/

Left Brain/Right Brain: *Comment on "Do aluminum vaccine adjuvants contribute to the rising prevalence of autism?"*

www.leftbrainrightbrain.co.uk/2013/07/10/comment-on-do-aluminum-vaccine-adjuvants-contribute-to-the-rising-prevalence-of-autism/