

Facts About Aluminum Adjuvants in Childhood/Adolescent Vaccines

Vaccines are safe, well tolerated, and effective. Vaccines work by introducing antigens that train the adaptive immune system - including dendritic cells, B cells, and T cells - to recognize threats. This enables the body to mount a stronger, faster response when exposed to the actual pathogen, thereby providing lasting immunity.

Aluminum adjuvants are one of the most extensively studied and safely used components in the childhood vaccination platform. For nearly a century, aluminum adjuvants have enhanced vaccine efficacy while maintaining an exceptional safety record across billions of doses administered globally. They are essential to vaccines protecting against **diphtheria, tetanus, pertussis, hepatitis B, pneumococcal disease, Hib**, and other serious infections.

Existing evidence overwhelmingly confirms the safety and tolerability of BOTH tested vaccine antigens and aluminum-adjuvant controls, and overwhelmingly supports the efficacy and necessity of aluminum adjuvants in pediatric vaccines.¹ Multiple large-scale studies, including a landmark Danish investigation of over 1.2 million children,² demonstrate no association between aluminum exposure in vaccines with chronic diseases, neurodevelopmental disorders, or autoimmune conditions. Regulatory agencies worldwide continue to affirm their favorable safety profile based on decades of surveillance data.

What Are Aluminum Adjuvants?

Aluminum adjuvants have been used in vaccines since 1926 to boost effectiveness, strengthen immune memory, and reduce the number of doses needed for lasting protection. The most common forms today - aluminum hydroxide and aluminum phosphate - work by holding antigens at the injection site to stimulate immune activation. While concerns about toxicity and long-term accumulation have circulated, **extensive scientific evidence continues to support their safety and benefits.**

Adjuvants Boost Vaccine Effectiveness



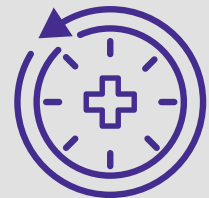
Stronger Immunity

Adjuvants act like an amplifier helping the body mount a more powerful and longerlasting defense



Reduced Burden

By enhancing immune response, adjuvants often reduce the number of doses required to achieve lasting protection



Proven Track Record

Aluminum adjuvants have been used in vaccines since 1926, with billions of doses administered safely across multiple vaccines

[1] pubmed.ncbi.nlm.nih.gov/22001122/; www.who.int/groups/global-advisory-committee-on-vaccine-safety/topics/adjuvants

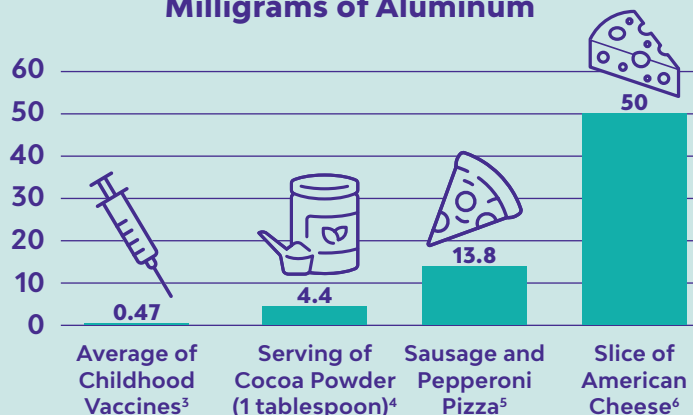
[2] <https://pubmed.ncbi.nlm.nih.gov/40658954/>

Aluminum Content in Vaccines³

Aluminum in Everyday Items: Aluminum is the most common metal found in nature. It is present in many everyday sources, including drinking water and numerous foods and beverages including fruits and vegetables, seasonings, flour, cereals, nuts, dairy products, baby formulas, and honey.³

Aluminum found in Childhood/Adolescent Vaccines vs. Aluminum found in Food

Milligrams of Aluminum



Aluminum in Small Amounts is Safe

Minute quantities: Vaccines range between including ~0.1 – 0.8mg of aluminum per dose, far below toxicological thresholds.* Aluminum exposure from vaccines is far less than what is ingested daily through food.

*FDA Limit (21 CFR 610.15): $\leq 0.85\text{mg}$ aluminum per dose⁷

Efficient clearance: The body naturally clears aluminum through the kidneys.

Strong evidence base: Decades of scientific studies confirm that aluminum in vaccines does not cause autoimmune or neurodevelopmental disorders.

Critical Safety Studies

Study Name	Population	Age Group	Conditions Examined	Key Findings
Danish National Cohort Study (Andersson/Hviid et al.) ⁸	1,247,227	0-5 yrs	50 chronic diseases: 36 autoimmune 9 allergic conditions 5 neurodevelopmental	NO association with ANY condition
US Multi-Site Study (Glanz et al.) ⁹	584,171	0-18 yrs	Type 1 Diabetes Mellitus	NO association
Aluminum Adjuvants vs. Placebos (Krauss et al.) ¹⁰	26,457 (RCT)	All	[increase in] Serious adverse events	NO evidence
CDC Vaccine Safety Datalink ¹¹	12M+	All	Comprehensive adverse event monitoring	NO safety signals detected

Key Takeaways

- Aluminum in vaccines are used to boost immune response and reduce burden of vaccination.
- Concerns about aluminum in vaccines stem from misinterpretations and misinformation.
- The body efficiently clears aluminum from vaccines.
- Aluminum adjuvants have one of the largest and most consistent safety databases in all of medicine.
- Safety is confirmed across all ages, populations, study designs, and regions.

[3] <https://www.chop.edu/vaccine-education-center/vaccine-safety/vaccine-ingredients/aluminum>

[4] <https://enveurope.springeropen.com/articles/10.1186/2190-4715-23-37/tables/3>

[5] <https://pubmed.ncbi.nlm.nih.gov/16019791/>

[6] <https://www.sciencedirect.com/science/article/abs/pii/S0264410X11015799?via%3Dihub>

[7] www.ecfr.gov/current/title-21/chapter-I/subchapter-F/part-610/subpart-B/section-610.15

[8] <https://pubmed.ncbi.nlm.nih.gov/40658954/>

[9] <https://pubmed.ncbi.nlm.nih.gov/26518400/>

[10] <https://pmc.ncbi.nlm.nih.gov/articles/PMC9226993/>

[11] <https://www.cdc.gov/vaccine-safety-systems/vsd/index.html>