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# **Vaccines, adjuvants and autoantibodies - where is the truth?**

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A number of half-truths, untruths and manipulative texts have been published about vaccines, their composition and protective effect against infections, in addition to solid scientific information. Sentences such as "... vaccines themselves cannot be said to provide any real protection against disease" [1], "... vaccines actually suppress the immune system's ability to produce TH2-type cytokines and thus suppress cellular immunity, which is necessary for the body to protect itself against deadly viruses or bacteria"[2] or translations from English "... secret government documents reveal that vaccines are a total fraud" (published 8. January 2013 by Ethan A. Huff)[3] or even "... most people who take the mRNA vaccine die within 5 years. So far, 4.2 million doses have been administered in the United States, and that number is growing every day. The population could be half that by 2025 depending on how many people take the mRNA vax" [4]. And the number of similar misinformation on social media increased dramatically during the Covid-19 pandemic.

Regarding the composition of vaccines, the most debated issue is that of adjuvants, substances that are supposed to enhance and prolong the effect of the vaccine. In 2011, a paper was published by Yehuda Shoenfeld and Agmon-Levin introducing the term "Autoimmune/inflammatory Syndrome Induced by Adjuvants", abbreviated as 'ASIA', i.e. autoimmune, inflammatory syndrome as an autoimmune response to adjuvants administered in vaccines [5]. Over the last four years (2020 to 2024), more than 160 studies have been dedicated to this syndrome. Not only adjuvants in vaccines, but also silicone implants [6] and polypropylene mesh used in surgical procedures [7] are considered adjuvants. Criteria have even been proposed for the ASIA syndrome, which allow the inclusion under this syndrome of health problems associated with the influence of defined "external" factors [8]. However, the problem is that these criteria are very general and some of them can be applied to any other disease.

The ASIA syndrome is associated with the induction of autoantibodies, i.e. antibodies that react with the intrinsic molecular components of tissues and cells [9-11]. However, they also react with the molecular components of viral particles or bacterial bodies, not taking into account that autoantibodies are intrinsic to every healthy person [12].

So how is it? Are vaccines a hoax or are they an excellent tool for immunoprophylaxis? Let's look a bit into the history.

Example One: Smallpox, also called smallpox or the angel of death (*Variola vera*), is one of the most dangerous infections, killing more than half a billion people in the last century alone. The variola vaccine, in its simplest form, originated in 1796 when Edward Jenner (1749-1823) protected an eight-year-old boy, James Phipps, through a process he called vaccination. Following an appeal by the World Health Organization, variola was then eradicated in the twentieth century. The last person to die of variola in the world was the Somali cook Ali Maow Maalin on 26 October 1977 [13].

Example two: Polio (poliomyelitis) is a viral infectious disease caused by the *Poliovirus*. If a child becomes infected, there is no treatment, no cure. The only possible protection is a vaccine. In the 1950s, two polio vaccines were developed, one oral (OPV), administered by mouth, prepared by Albert Bruce Sabin (birth name Abram Saperstein, 1906-1993), the other parenteral (IPV), injectable, prepared by Jonas Edward Salk (1914-1995). Thanks to these vaccines, polio was almost eradicated, even in Africa [14].

Example Three: Measles is a highly contagious disease that is the leading cause of death in unvaccinated children under five years of age worldwide [15]. The disease is caused by an RNA virus from the *Paramyxoviridae* family. In the 1950s, John Franklin Enders (1897-1985) and colleagues prepared two types of measles vaccine, a live measles vaccine containing live attenuated virus and an inactivated vaccine containing formalin-killed whole virus particles [16, 17]. Regular vaccination with the MMR vaccine, which contains attenuated measles, mumps, and rubella viruses, is currently being performed [18]. Also, vaccines prepared for measles immunoprophylaxis protect millions of children from death each year.

What about 'ASIA'? A review of adjuvant-induced autoimmune inflammatory syndrome, published in 2023, reported that typical symptoms of 'ASIA' syndrome include chronic fatigue, unrefreshing sleep or sleep disturbances, muscle weakness, shoulder arthritis or arthritis, cognitive impairment, memory loss, fevers, dry mouth or dry eyes, and unspecified neurological problems [8]. Few physicians would consider any of these symptoms to be typical of a particular disease, as these symptoms accompany a variety of quite clearly defined diagnoses. Moreover, the statement that "...removal of the inciting agent produces improvement" applies very well to common allergies.

The association of the 'ASIA' syndrome with autoantibody induction is also very vague, given that autoantibodies can be found in any healthy person [12]. It is true that an external signal is required for their specific overproduction, be it an infection, a tumour or an implant. Pierre Grabar (1898-1986) proposed that natural antibodies are part of a physiological mechanism to remove their own catabolic and foreign products; from this perspective, they appear as autoantibodies [19]. The idea of the authors of this text is close to Grabar's theory, with the suggestion that autoantibodies form a kind of "house-keeping" program and are an integral part of natural immunity. At the same time, they thus form the molecular basis for the induction of adaptive immunity, which is consistent with Jerne's theory of antibody production [20]. Thus, autoantibodies provide autoimmunity, i.e. protection from one's own unwanted products and components, which is not the same as autoimmune disease.

Vaccines are not to be feared, they have saved hundreds of millions of human lives, not only against infections, but are now beginning to protect against some cancers through so-called biological therapies. Neither misinformation, misinformation nor a certain misunderstanding of biological systems will change that.

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