

# Antioxidants and vaccines

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## Editorial

A vaccine is a biological preparation that improves immunity to a particular disease. The vaccines typically contain agents that resemble disease-causing microorganisms and are often made from weakened or inactive forms of the microbes, its toxins, or one of its surface proteins. The mechanism underlying this concept is that the agents stimulate the body's immune system to recognize the agents as foreign, destroy them, and remember them so that the immune system can more easily recognize and destroy the microorganisms that it later encounters. People are suspicious in these days that these agents may have adverse effects. In this context, New York State Department of Health along with leading US organizations, UNICEF, and other prominent international organizations have finally concluded that vaccines are safe and save lives. The Global Vaccine Action Plan (GVAP) is a framework to prevent millions of deaths by 2020 through available vaccines for people in all communities throughout the world. GVAP aims to strengthen routine immunization plans and introduce and develop new high-quality vaccines.<sup>1</sup>

Though there are some adverse effects of vaccines, they are uncommon or less effective. While looking at the negative impact, one should not ignore vaccines; otherwise, it leads to severe problems due to lack of immunization. Some diseases (influenza, etc.) may spread to adults from children. Some vaccine-preventable diseases leave a person disfigured or disabled for life, and hence, they are a severe threat to this society. Usually, allergy from vaccines is a common problem for some children, and when it is, we should avoid giving that particular vaccine. Allergic reactions are due to certain ingredients that are present in the vaccines or due to other unknown reasons. In the meantime, adverse effects or toxicity of vaccines should be monitored thoroughly, or otherwise, certain compounds may alter immunity or even brain function during the developmental period of the pediatric population. One report reveals that children in developed countries receive high amounts of aluminum adjuvants through routine vaccinations. There are unbiased opinions on mercury, which is present in some vaccines.<sup>2,3</sup>

Antioxidants (vitamins) play a significant role in disease management. Usually, diseases are mediated by reactive oxygen species ROS. Foods that are rich in antioxidants have a potential protective effect against disorders caused by ROS. Chronic diseases can be eliminated, and disease progression can be slowed by implementing the natural antioxidant defenses of the body or by supplementing them with dietary antioxidants. Natural antioxidants such as flavonoids, tannins, and polyphenols act by donating electrons to intermediate radicals and help the inhibition of lipid peroxidation. Antioxidants therapies have been in progress these days. N-acetylcysteine (for acetaminophen toxicity), alfa-lipoic acid (for diabetic neuropathy), Edaravone (for ischemic stroke), and some flavonoids (for chronic venous insufficiency) as well as baicalein and catechins (for osteoarthritis) have clinical importance. Many reports reveal the role of antioxidants as vaccines or ameliorating vaccine-induced adverse effects. Fruits and vegetable are rich in vitamins, and hence intake of adequate amount of these food items by the pediatric population at the period of vaccination is advisable.<sup>4-9</sup>

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## Conflicts of interest

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