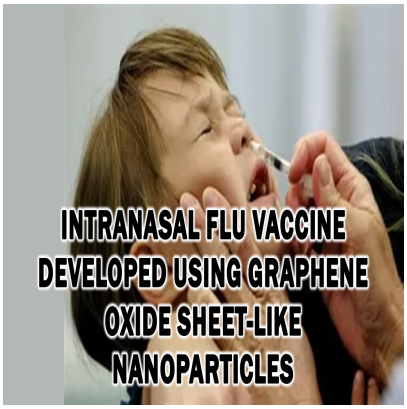

Intranasal Flu Vaccine Developed Using Graphene Oxide Sheet-Like Nanoparticles

Description

 USA: **Last year Georgia State University announced that researchers had developed an influenza vaccine made of nanoparticles and administered through the nose.**

In this study, the researchers developed an intranasal influenza vaccine and they also created a two-dimensional nanomaterial (polyethyleneimine-functionalised graphene oxide nanoparticles).

“In our study, we reported for the first time that two-dimensional graphene oxide nanomaterials had a potent adjuvant effect in boosting the immune responses of intranasal hemagglutinin (HA) vaccines,” said Dr. Chunhong Dong, lead author of the study. “This study gives new insights into developing high-performance intranasal vaccine systems with two-dimensional sheet-like nanoparticles.”

Who is Graphene-Info?

We discovered the development of this “vaccine” administered via the nose using graphene oxide through an article published by Graphene-Info.

Whenever we read an article, we should use our critical thinking to establish not only how factual it is but also if it has any inherent bias. One quick way to give some insight is to get a feeling for the nature of the source, whether it could be from a particular perspective or has an inherent bias, by browsing the website, for example. In the case of Graphene-Info, the ‘About us’ page states:

> “Graphene-Info is a comprehensive portal for all things graphene. It was launched in 2009 as a graphene news aggregator and quickly grew to become a hub for graphene professionals and enthusiasts.
>
> “We see ourselves as graphene evangelists, spending our time learning the material and interacting with players in the industry to form a solid foundation for the versatile arsenal of services we offer. We pride ourselves on having a unique understanding of the market, and

aim to use it for the growth and advancement of the graphene industry."

There is an obvious inherent bias with a site so openly enthusiastic about graphene. That doesn't mean we should ignore or dismiss everything the "graphene evangelists" or their site promoting "all things graphene" publish. It simply indicates it is telling some of the truth but not necessarily all. That its bias will be to praise "all things graphene" as wonderous while glossing over or attempting to downplay the negatives or harms; and that we should look at alternative sources to get a more balanced view. However, now knowing this inherent bias exists, Graphene-Info could be a useful resource to highlight "all things graphene" should you wish to stay informed.

Keeping the above in mind, and so you can filter out the pro-graphene bias for yourselves, below we have republished Graphene-Info's article '*Graphene oxide gives a boost to new intranasal flu vaccine*' word for word as it highlights using graphene in "vaccines," more specifically "vaccines" that are aerosols, or sprays, as opposed to injections.

Graphene oxide gives a boost to new intranasal flu vaccine

Researchers at Georgia State University and Emory University have developed an intranasal influenza vaccine using recombinant hemagglutinin (HA), a protein found on the surface of influenza viruses, as the antigen component of the vaccine.

They also created a two-dimensional nanomaterial (polyethyleneimine-functionalised graphene oxide nanoparticles) and found that it displayed potent adjuvant (immunoenhancing) effects on influenza vaccines delivered intranasally.

"In our study, we reported for the first time that two-dimensional graphene oxide nanomaterials had a potent adjuvant effect in boosting the immune responses of intranasal hemagglutinin (HA) vaccines," said Dr. Chunhong Dong, lead author of the study and a postdoctoral research Fellow in Dr. Baozhong Wang's lab in the Institute for Biomedical Sciences.

"This study gives new insights into developing high-performance intranasal vaccine systems with two-dimensional sheet-like nanoparticles," Dong said. "The graphene oxide nanoparticles have extraordinary attributes for drug delivery or vaccine development, such as the ultra-large surface area for high-density antigen loading, and the vaccine showed superior immunoenhancing properties in vitro and in vivo. The nanoplatform could be easily adapted for constructing mucosal vaccines for different respiratory pathogens."

The study, conducted in mice and cell culture, found the nanoparticles significantly enhanced immune responses at mucosal surfaces and throughout the body in mice. The robust immune responses conferred immune protection against influenza virus challenges by homologous (same) virus strains and heterologous (different) virus strains.

The results are also promising because needle-free, intranasal influenza vaccines possess superior logistical advantages over traditional injectable vaccines, such as easy administration with high acceptance for recipients and the avoidance of biohazardous waste.

Toxicity of graphene oxide

Previously, we have published numerous articles regarding graphene found in Covid injections and face masks, the harmful effects of graphene on the human body, graphene being transmitted from the “vaccinated” to non-vaccinated and how to detox from graphene. The first article we published was in mid-July 2021 and the most recent was at the end of May 2022. Follow this LINK to browse through our articles on graphene.

It is always useful to read the comments under articles as they often provide a useful starting point for alternative views and resources. In response to Graphene-Info’s article, users have been posting comments highlighting the toxicity of graphene. One user commented:

“There are plenty of studies linking graphene to toxicity. I personally work with graphene and it caused an irritation reaction and permanent discolouration of my skin from a single exposure. Think what it might do to the sensitive nasal mucosa.”

by Rhoda Wilson

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