Aluminum Hydroxide Adjuvants Vaccine Linkers

Published date: May 30, 2013

Technology description

Background

Vaccines typically work by exposing the body to an antigen, which is either a weakened form of a microorganism or a toxin that it creates. This exposure stimulates an immune system response that lets the body recognize the pathogen so that it can more easily recognize and destroy it in the future. Sometimes, the proteins used in the vaccine are bound to an adjuvant (commonly aluminum hydroxide), which acts as an irritant to enhance the immune response to the antigen while reducing the amount of foreign material that must be injected. To attach the aluminum hydroxide to the protein, a phosphate group is first attached to the protein. Phosphate groups have a high electrostatic affinity for aluminum hydroxide, so they readily bond to each other. However, current techniques for attaching the phosphate group to a protein have the unintended effect of changing the structure of the protein.

Technology Summary

Purdue University researchers have developed a simple chemical reagent that attaches a phosphate group to specific sites on the protein, but does not change the overall structure. This method can work with a wide variety of antigens and could lead to vaccines that are more effective for many pathogens.

Application area

Medical/Healthcare
Pharmaceutical industry
Vaccines

Advantages

Does not modify protein structure
Works with many varieties of antigens
Uses adjuvant with excellent safety record

Institution

Purdue University

Inventors

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