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Article Reviewer

1. Full Bibliographic Reference

Article: Engineering a Next-Generation Glycoconjugate-Like Streptococcus pneumoniae Vaccine

Hill, A. B., Beitelshees, M., Nayerhoda, R., Pfeifer, B. A., & Jones, C. H. (2018). Engineering a Next-Generation Glycoconjugate-Like Streptococcus pneumoniae Vaccine. ACS Infectious Diseases, 4(11), 1553-1563. doi:10.1021/acsinfecdis.8b00100

2. Introduction

The introduction expresses the demand to develop a universal and next-generation glycoconjugate *Streptococcus pneumoniae* vaccine due to the global mortality and morbidity effects. *Streptococcus pneumoniae* has over 90 known serotypes that kill and hospitalize hundreds and thousands of people per year due to its direct person-to-person respiratory transmission. Within this study, researchers tested their new liposomal encapsulation of polysaccharides vaccine on mice through several challenging models to ultimately produce a more safe, broad, and protective vaccine.

3. Materials and Methods

Researchers conducted many challenging models and tests with mice when testing their next-generation glycoconjugate *Streptococcus pneumoniae* vaccine. They also measured bloodwork levels to include concentrations of metabolites to evaluate the immunogenicity, production, and neutralization activity of antibodies from the vaccine. The article included six figures and two tables that detailed and categorized each challenge model for readers to interpret.

4. Results

The vaccine results did not produce toxicity levels among the mice, which indicates that this next-generation LEPS vaccine can provide effectiveness on current polysaccharide-conjugate options.

5. Issues by the Author

The authors worried about the threat of emerging nonvaccine-type serotypes when providing immunization against both *Streptococcus pneumoniae* colonization and developing diseases.

6. Issues by Reviewer

This was a preliminary article, thus readers needed to have a prior knowledge of engineering glycoconjugate-like vaccines to understand the main concepts and diction used from the

authors. I had a difficult time reading through the article because I had no prior knowledge of this type of vaccine development or methods applied.

7. Relevance & Impact

This is an original research article, which means the researchers preformed all the studies and are now primary sources for these new findings. This article is relevant and important because it effects all populations across the globe in large numbers. Another key issue to address is the high number of serotypes *Streptococcus pneumoniae* has over 90 serotypes, which are distinct differences within the bacteria species. Which raises the question, will this new vaccine be able to target most of these serotypes? This also raises a concern that non-vaccine serotypes could increase and ultimately reduce the benefits of a vaccine.

8. Questions

Why do you think the authors placed the results and discussion together and in the beginning of the article?

Why do you think there was no distinct conclusion provided? Do you think the authors should of included a conclusion to summarize their work with the addition of future directions?

The introduction addressed the morbidity and mortality rates of children, is this vaccine more geared to the pediatric population or all ages? Is it more important to target the pediatric population? Why does this disease affect pediatrics more? Are they more susceptible than adults?