



Toxoid Vaccine for Antibiotic Resistant Staphylococcus aureus (20110070, Dr. Patrick Schlievert)

Technology No. 20110070

Vaccine Targets Staphylococcus aureus Toxins

A vaccine targeting antibiotic resistant Staphylococcus aureus prevents infection by targeting several secreted bacterial toxins. S. aureus produces a family of exotoxins (superantigens and cytolytins) that hyper-activate the immune system and facilitate the organism's ability to cause infections and death. These toxoid vaccine candidates provide 100% immunity in separate rabbit models of endocarditis and pneumonia, highly relevant surrogates for the human condition. These vaccines are not produced in eggs, decreasing manufacturing costs, reducing risk of adverse reactions, and increasing the number of eligible patients.

Antibiotic Resistant Staphylococcus aureus Poses Treatment Challenges

Staphylococcus aureus is a highly-virulent bacterial pathogen and the most significant cause of human infection. S. aureus infections can be acquired within the hospital and community. S. aureus treatment options are limited due to the emergence of antibiotic resistant strains, such as methicillin-resistant Staphylococcus aureus (MRSA). Thus, efforts have shifted towards developing a vaccine. However, S. aureus' virulence and ability to rapidly acquire and repress redundant virulent determinants have posed challenges to current vaccine trials that target S. aureus surface proteins.

S. aureus Vaccine Acts as an Adjuvant

A recent discovery revealed that the superantigens have an additional host cell receptor that mediates antibody production. Studies evaluating antibody production in response to the superantigen and cytolytin toxoid vaccine candidates show a synergistic effect when administered in combination. Thus, this vaccine acts as an adjuvant, suggesting benefits as a complement to existing vaccines.

BENEFITS OF VACCINE FOR ANTIBIOTIC RESISTANT STAPHYLOCOCCUS AUREUS:

- Polyvalent vaccine targets antibiotic resistant strains of S. aureus
- Provides protection against the most common strains of S. aureus
- Adjuvant vaccine can be combined with existing vaccines
- Not produced in eggs which decreases manufacturing costs, reduces risk of adverse reactions and increases number of eligible patients
- Targets toxins secreted from S. aureus
- Mechanism of action targets surface proteins
- Improved efficacy over competitors
- 100% immunity in animal model

Product Details The technology consists of the design for the Staphylococcus aureus vaccine that targets toxins secreted by bacteria.

Fulfillment Details The licensee will receive the rights to practice the intellectual property (patent application) for the purposes of developing and manufacturing a commercial product.

Phase of Development In vivo/animal models.

Researchers

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