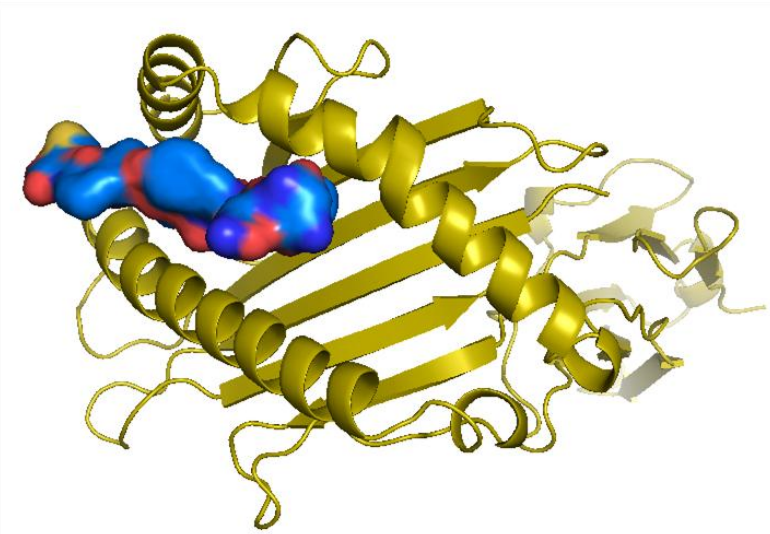


Outlines

- The mRNA vaccines enhance protein translation, modulate innate and adaptive immunogenicity and improve delivery.
- mRNA vaccines have provoked potent immunity to infectious disease targets
- The Immunoinformatics approach is a popular and effective method to design vaccines for diseases.

Overview

Vaccination is considered to be a strong strategy for preventing infectious diseases. The effective vaccine and use of it may save lives and reduce healthcare investment. The immunoinformatics approaches have shown the effectiveness to design vaccines for diseases.



Challenge

Collection of protein sequences and pre-processing for the consensus sequence followed by identification of antigenic, non-allergenic and non-toxic epitopes. Based on the selected epitopes final vaccine constructs development.

Approach

High antigenic sequences across the globe were considered and a consensus sequence was generated. Out of thousands of epitopes, highly antigenic, non-allergenic and non-toxic epitopes were identified and vaccine constructs were generated. Followed by the quality assessment of each vaccine construct, immune simulation and affinity towards TLRs were assessed.

Results

The vaccine constructs were developed using the pharmacoinformatics approaches and proposed a set of possible effective vaccine constructs. The selected epitopes were connected with suitable linkers, adjuvants and other components. High thermal stability, non-toxic, antigenic and non-allergenic nature vaccine constructs were selected. The molecular docking revealed the strong affinity of the vaccine constructs towards TLRs. The immune simulations and gene cloning revealed the potentiality of the vaccine constructs.

