

عنوان مقاله:

In silico analysis of chimeric IL2-MUC1-IFN γ vaccine against breast cancer

محل انتشار:

اولین کنگره بین المللی و سیزدهمین کنگره ژنتیک ایران (سال: 1393)

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خلاصه مقاله:

Background: Breast cancer is an important cause of cancer-related deaths in Iranian women. Immunotherapy can be effective in treating the advanced breast cancer. We have designed an immunogen derived from, the extracellular domain of MUC1(7 tandem repeats/VNTR) as major antigen breast cancer and nearly whole of IFN γ sequence(24-161) and IL2 sequence(21-153) as an vaccine for expression in plant. Methods: Related sequences of MUC1, IL2 and IFN γ were obtained from UniProtKB/Swiss-Prot. The physico-chemical properties were analyzed by the ExPASy's ProtParam software. Segments were selected based on prediction of immunogenic epitopes. Linear B-cell epitopes of construct were estimated by bcepred. Discontinuity 1.2 was employed to predict discontinuous B-cell epitopes. In general, epitopes having VaxiJen cutoff values of >0.5 was selected. For T-cell epitope prediction. MHC2Pred was employed to predict peptides from the protein binding with MHCII. The chimeric construct codons were optimized based on plant host by EMBOSS. The mRNA secondary structure of the gene was evaluated by the RNAfold software. The prediction of the secondary structure of the protein was performed using the GOR-IV. The 3DJIGSAW was employed for tertiary structure prediction. The tool Accelrys Discovery Studio 2.5 was used to visualize the modeled 3D structures. 3D structural stability of the protein was evaluated by Swiss-Pdb Viewer software for energy minimization. SDAP allergen library and APPLE software were used to predict the allergenicity of the protein. Results: All of the gained results suggest that this vaccine can work against breast cancer correctly. Conclusion: Before working experimentally we should be confident about the validity of vaccine by in silico analyses

کلمات کلیدی:

Breast Cancer, Chimeric vaccine, IFN γ , IL2, MUC1

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