

عنوان مقاله:

Designing a Construct of Chimeric Multi-Epitopes Protein for Contraceptive Vaccine in Mice: An Immunoinformatics and In Silico Study

محل انتشار:

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خلاصه مقاله:

Background: Contraceptive vaccines (CVs) can be used as a valuable and alternative method for the prevention of gestation in humans and animals. These vaccines can have several targets, such as superficial sperm proteins. Vaccines based on sperm antigens are quite efficacious to create a contraceptive effect. However, multi-epitope vaccines are more effective in stimulating the immune system and producing more antibodies to reduce the infertility rate. **Materials and Methods:** This study aimed to design and evaluate a chimeric fusion protein containing IZUMO₁, SACA³, and PH-20 epitopes. IZUMO₁, SACA³, and PH-20 were assessed, and appropriate regions were selected using various bioinformatics tools, including IEDB, I-TASSER, ProtParam, Asa-View, and Chimera software. Protein epitopes were selected based on various characters, including specificity, solvent accessibility, their weight and length, antigenic intensity, and topology. Epitopes with high antigenic potential were selected and joined together by linkers. The designed fusion protein was simulated using Molecular Dynamic, GROMACS 5, and Chimera 1.14 software. **Results:** The results demonstrated that all antigenic plots and availability of epitopes in the new construct remained constant. The spermatogenic antigens were combined using rigid linkers as a new construct and showed a stable formation with proper solvent accessibility validated by ProSA-web and PROCHECK. Also, comparing the new structure with its original one did not show any structural change. **Conclusion:** Based on bioinformatics results, the fusion protein that consists of three spermatogenic antigens has productive potential to stimulate the immune system and capable of producing more antibodies in circulation and reliable infertility.

کلمات کلیدی:

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