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Investigation of cellular immunity via proliferation of T cells and role of immunogen sequences gag-tat-env-pol (HIV-1) and gp41-p24 as a candidate in the design of HIV-1 multi-epitope recombinant vaccines

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Introduction: Today, the technology of production of recombinant proteins enjoys a specific importance and using the technology of recombinant proteins infinite number of immunogen sequences has been produced and as well have entered the therapeutic cycle. And the research for their production and expansion considering its effectiveness are on increasing verge in relation to the synthetic drugs. In this research we investigated the function of some of the most important immunogen sequences obtained from HIV-1 virus as one of the immunogen candidate in the design of recombinant vaccines that includes gag-tat-env-pol and gp41-p24. This evaluation has been conducted on the proliferation and increase of T lymphocytes in the different groups.

Material & Methods: Immunization of 6 to 8 weeks male rats in subcutaneous form in two groups (each group 20 rats), 20 µg/mouse and 50 µg/mouse and in each injection dose, one prime and two boosters was carried out. According to immunization table, the rats on 14, 28 and 42 days were subjected to spinal injury and after the 27 hours cell growth, 2x106/cell, cell suspension was prepared in RPMI1640 medium with 5% FCS. 100 µl for LTT test and 50 µl for Brdu test were transferred to the culture plates. Triplicate plates were designed, the positive control with PHA and vials allocated with immunogen sequences were considered as an antigen and negative control without an antigen and to each of the wells the tagged thymidine at a concentration of 1 µci/well was added. And plates were again incubated for a period of 18 hours the cells were collected via harvester system and via beta counter system, the cell counts were carried out. The results were calculated according to CPM and its SI was assessed. Even Brdu test was carried out in ELISA plates, the results was conducted using the one-way ANOVA statistical analysis with 95% assurance coefficient and a significant level less than 0.05.

Results: The results obtained from proliferation of T lymphocytes in both the methods had a significant difference at $P<0.05$ in the recipient groups of both the antigens that were recipients of second booster as well and received 50 µg protein/mouse in relation to the groups that were recipients of each antigen alone and control groups, that received 50 µg protein/mouse and were immunized with two boosters. Similarly a significant difference at $P<0.05$ between the groups that were recipients of both the antigens and received only a booster were observed in relation to the prime group at 50 µg/mouse dose.

Discussion: The different researches demonstrated that immunogen sequences obtained from HIV-1 virus have ability to stimulate T lymphocytes as the cellular immunity index and proliferation rate of the antigen will be different. This research shows that synergistic effect of these 2 immunogen sequences, have an ability to stimulate and proliferate T lymphocytes at 50 µg/mouse dose and 2 boosters and increase it to the highest level and can be introduced as a powerful immunogen candidate in the design of HIV poly-epitope vaccines

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