عنوان مقاله:

The Effect of Oncolytic Reovirus Infection on Nitric Oxide Secretion and Induction of Apoptosis in Adipose Tissue-Derived Mesenchymal Stem Cells

محل انتشار:

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نویسندگان:

Razieh Sadat Banijamali - *Department of Virology, Faculty of Medical Sciences, Tarbiat Modares University, Tehran, Iran*

Hoorieh Soleimanjahi - *Department of Virology, Faculty of Medical Sciences, Tarbiat Modares University, Tehran, Iran*

Sara Soudi - *Department of Immunology, Faculty of Medical Sciences, Tarbiat Modares University, Tehran, Iran*

Hesam Karimi - *Department of Virology, Faculty of Medical Sciences, Tarbiat Modares University, Tehran, Iran*

خلاصه مقاله:

Background and Aims: Oncolytic viruses (OVs) are a new approach in treatment of cancer. Antitumor efficacy of OVs were limited due to insufficient and non-specific viral delivery to tumor sites. To overcome this issue, mesenchymal stem cells (MSCs) were used for their ability to specifically homing into tumors. The main aim of this study was to use MSCs as carriers and investigate the effect of oncolytic reovirus infection in MSCs, induction of apoptosis, nitric oxide (NO) secretion and their effects for selectively killing tumor cells, to use in future. Materials and Methods: MSCs isolated from mice adipose tissue and confirmed. Then, the ability of the virus to infect MSCs and the effect of reovirus infection in induction of apoptosis and NO secretion in MSCs were evaluated. Results: The results demonstrate that reovirus could replicate on MSCs. The finding indicated that the NO production significantly was higher at ۷۲ h post infection with different MOI in comparison to the control cells. Also, reovirus induced high level of apoptosis in the MSCs at ۴۸ h post infection compared with the control cells. Conclusions: Based on observed results, reovirus increased the secretion of iNOS (inducible nitric oxide) in the infected MSCs at ۴۸ h post infection; therefore, high amounts of NO and reovirus replication were found to trigger apoptosis at ۴۸ h post infection. Therefore, by optimizing the replication time of virus in the MSCs, specific viral delivery to tumor sites are available and causes cancer cells' death.

کلمات کلیدی:

Oncolytic Reovirus T۳D, Mesenchymal Stem Cell (MSC), Carrier Cell, Nitric Oxide (NO), Apoptosis, Cancer Therapy,
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