Neda Bayat et al., J Tissue Sci Eng 2016, 7:2(Suppl)
http://dx.doi.org/10.4172/2157-7552.C1.025

Atorvastatin induces apoptotic gene expression in glioblastoma cells in three-dimensional culture

Neda Bayat, Somayeh Ebrahimi-Barough, Abbas Norouzi-Javidan, Hooshang Saberi, Mohammad Mehdi Mokhtari Ardakan and **Jafar Ai**
Tehran University of Medical Sciences, Iran

Glioblastoma multiform (GBM) is highly aggressive brain tumors thought to be of glial cells origin. It is better to identify key molecular targets stimulating signaling pathways that lead to initiation of apoptosis for treatment of glioblastoma. In this study, atorvastatin was used as a kind of statins for induction of apoptosis, and inhibition of migration and invasion in human U87 glioma cells. Studies show that in vitro three-dimensional (3D) tumor cell cultures exactly reflect the complex in vivo microenvironment than simple two-dimensional cell culture. To reach for these aims, 3D model of glioma in fibrin gel was used with different concentrations of atorvastatin (1, 5, 10μM) to assay apoptotic genes expression (caspase-8 and caspase-3) and TUNEL assay to evaluate the cell apoptosis. After 24 and 48 hours exposing with different concentrations of atorvastatin, cell migration and invasion of tumor cells were investigated. The results showed atorvastatin induced apoptosis of glioma spheroids dose- dependently. Atorvastatin induced the expression of caspase-3 and caspase-8, and down-regulated the expression of Bcl-2. The invasion and migration of U87 spheroid cells decreased after 48 hours especially with 10μM concentration of atorvastatin. The most likely mechanisms are the induction of apoptosis by caspase-8- caspase-3 signaling pathway. Finally these results suggest that atorvastatin could be used as anticancer agent for glioblastoma treatment.

Biography

Neda Bayat is PhD student of Tissue Engineering at the age of 34 years from Tehran University of Medical Science. She has published more than 6 papers in reputed journals.

bayat.neda@yahoo.com

Notes: