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Antitumor activity of a TGIF2LX in human cancer

Mansour Heidari[1,2], **Reza Raoofian**[1] and **Abolfazel Akbari**[2]
[1]Tehran University Medical Sciences, Iran
[2]Iran University of Medical Sciences, Iran

The TGIF2lX (transforming growth factor beta-induced factor 2 like, X-linked) homeobox gene was originally discovered in human adult testes. This gene encodes a homeodomain (HD) protein implicated in normal and human cancer development. Here, we report TGIF2LX abnormal function in colon adenocarcinoma and in glioblastoma. Our data showed over-expression of TGIF2LX as a potential transcription factor which could inhibit either proliferation or angiogenesis ($P<0.05$) in colon tumors. In order to understand abnormal functions of TGIF2LX, we cloned the entire coding sequence of TGIF2LX gene into the pEGFP-N1 vector, eukaryotic expression vector encoding eGFP and transfected into the U-87 MG cell line. The TGIF2LX- GFP expression was confirmed by real time RT-PCR and UV microscopic analysis. Upon transfection into U87 cells, fusion protein TGIFLX-GFP was found to locate mainly in the nucleus. This was the first report that determined the nuclear localization of TGIFLX and evaluation of its expression level between different brain tumor cell lines. Our data suggest that TGIF2LX gene dysregulation could be involved in the pathogenesis of some human brain tumors. Our findings have provided the evidence of molecular mechanisms by which TGIF2LX could act as a tumor suppressor in colon adenocarcinoma cells. Thus, this gene may potentially be a promising option for brain and colon cancer gene-based therapeutic strategies.

mheidari@sina.tums.ac.ir