Abstract

Glioma is a type of cancer which arises from cells of glial origins. Glioma represents over 80% of all malignant primary neoplasms occurring in the brain and central nervous system. To date, the treatment of glioma is still limited to radiotherapy, surgery and Temozolomide. Therefore, survival rates of glioma still varies greatly between the many types of glioma with glioblastoma multiforme— the highest grade of glioma— having only 5% survival rates at 10 years. Sirtuin-1 (Sirt-1) is a part of the class III histone deacetylase family which is capable of deacetylating acetyllysine groups on a broad range of proteins including histones in the presence of NAD+. Sirt-1 has been implicated in a number of cancers for playing roles in regulating apoptosis, cell survival, inflammation, DNA repair, and Epithelial Mesenchymal Transition. However, the role of Sirt-1 in glioma is still relatively controversial as many individual studies reports oncogenic properties of Sirt-1 but higher expression of Sirt-1 have been correlated with increased survival. In this study, it is demonstrated that the decrease in Sirt-1 activity decreases cell viability, while increase in Sirt-1 activity increases cell proliferation, and migration. However, the increase of Sirt-1 induces severe loss of clonogenicity while reduction of sirt-1 causes minor loss of clonogenicity.