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Olea europaea (olive) leaf extract alters miRNA expression in GBM cell lines and GBM stem cells

Gulcin Tezcan

Uludag University, Turkey

Abstract

Glioblastoma (GBM) might contain and arise from stem like cells (GCSC) which are responsible for maintenance and propagation of tumors and cause therapeutic resistance and tumor recurrence. One of the most attractive cancer therapy methods to date is the induction of tumor cell death by certain phytochemicals. We investigated the active component of *Olea europaea* (olive) leaf extract (OLE) and its effect on cell death and regulation of associated miRNA expressions in GBM cell line T98G and GCSCs in our studies. OLE, including 9.6126 mg/mL Oleuropein, exhibits apoptotic effect on T98G cells in WST-1, FITC Annexin V and TUNEL assays. Furthermore, when OLE used in combination with Temozolomide (TMZ), it increased the activity of TMZ. After OLE treatment, mir-181b, miR-153, miR-145, miR-137 and let-7d expressions were significantly altered in T98G cells ($p<0.05$), however, in GCSCs, only miR-153 and miR-137 expression levels were significantly altered ($p<0.05$). These miRNA's target genes were as related to cell cycle and apoptosis pathways. Our data indicate for the first time that OLE have an anti-proliferative effect and alters miRNA expression in human GBM cells and GCSCs. Further studies and validations are needed but we suggest that OLE might be used for in vivo studies and future medical drug studies.

Biography

Gulcin Tezcan is graduated from Biology Department of Eskisehir Osmangazi University, Turkey in 2005. And she completed her MSc from Istanbul University, Cerrahpasa Medical Faculty, Medical Biology Department, Istanbul in 2008. She is a PhD candidate and focused on analyzing natural theraupeutics and their effects on miRNA expression profiles in GBM and GBM stem cells on her thesis.