# Prolylisomerase

Accumulating data show that prolylisomerase (Pin1) is overexpressed in human glioblastoma multiforme (GBM) specimens. Therefore, Pin1 inhibitors should be investigated as a new chemotherapeutic drug that may enhance the clinical management of human gliomas. Recently, juglone, a Pin1 inhibitor, was shown to exhibit potent anticancer activity in various tumor cells, but its role in human glioma cells remains unknown.

In a study, Wang et al. determined if juglone exerts antitumor effects in the U251 human glioma cell line and investigated its potential underlying molecular mechanisms. Cell survival, apoptosis, migration, angiogenesis and molecular targets were identified with multiple detection techniques including the MTT cell proliferation assay, dual acridine orange/ethidium bromide staining, electron microscopy, transwell migration assay, chick chorioallantoic membrane assay, quantitative real-time polymerase chain reaction and immunoblotting. The results showed that 5-20 μM juglone markedly suppressed cell proliferation, induced apoptosis, and enhanced caspase-3 activity in U251 cells in a dose- and time-dependent manner. Moreover, juglone inhibited cell migration and the formation of new blood vessels. At the molecular level, juglone markedly suppressed Pin1 levels in a time-dependent manner. TGF-β1/Smad signaling, a critical upstream regulator of miR-21, was also suppressed by juglone. Moreover, the transient overexpression of Pin1 reversed its antitumor effects in U251 cells and inhibited juglone-mediated changes to the TGF-β1/miR-21 signaling pathway. These findings suggest that juglone inhibits cell growth by causing apoptosis, thereby inhibiting the migration of U251 glioma cells and disrupting angiogenesis; and that Pin1 is a critical target for juglone's antitumor activity. The present study provides evidence that juglone has in vitro efficacy against glioma. Therefore, additional studies are warranted to examine the clinical potential of juglone in human gliomas [1].

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Wang J, Liu K, Wang XF, Sun DJ. Juglone reduces growth and migration of U251 glioblastoma cells and disrupts angiogenesis. Oncol Rep. 2017 Aug 3. doi: 10.3892/or.2017.5878. [Epub ahead of print] PubMed PMID: 28791366.