A Torilis japonica extract exerts anti-proliferative activities on the U87MG human glioblastoma cell line.

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Abstract
Torilis japonica is a wild biennial herb and has been used as a traditional medicine for the treatment of inflammation, skin disease and impotence. Here, we studied the effects of a T. japonica extract on the proliferation of the U87MG human glioblastoma cell line. The extract inhibited cell proliferation in a dose- and time-dependent manner, as determined using the MTT assay. We next investigated the molecular mechanisms underlying its anti-proliferation properties by examining cell cycle progression and cell death. T. japonica extract induced S-phase cell cycle arrest and inhibited the expression of cell cycle-regulatory proteins, including cyclin A, cyclin-dependent protein kinase 2 and E2F1. The extract also induced apoptotic cell death as evaluated by nuclear morphology and flow cytometry using Annexin-V/PI dual staining. Furthermore, Western blot analysis showed that apoptotic cell death was mediated by both mitochondria-independent and caspase-dependent pathways. Together, our findings indicate that the T. japonica extract contains bioactive compounds with anti-cancer effects. These materials may be useful in the chemotherapy of human glioblastoma.

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