Thymoquinone attenuates phosphorylation of AKT to inhibit kidney cancer cell proliferation

**Background:** Nigella sativa is extensively used for medical remedies since ages in Middle East. Thymoquinone (Tq) is the major active constituent of this plant in which many reports confirmed the anticancer activities of the compound. However, the effect of Tq in kidney cancer cells and the pathway of action remains unproven. Herein we report anticancer properties of Tq in the kidney cancer cells.

**Methods:** Cancer proliferation was assessed using A498 and Caki1 kidney cancer cells by MTT assay. Nuclear fragmentation was detected using Hoechst 333258 and Propidium iodide dual staining. Trans endothelial migration assay was used to study migration inhibitory effects of Tq. Flow cytometry was used to analyze apoptosis and cell cycle. Anti, pro apoptotic markers and Akt phosphorylation were measured by Western bolting procedure.

**Results:** Tq demonstrated anti-proliferative effects in A498 cells with GI50 value of 40.07 μM and Caki-1 cells with GI50 of 51.04 μM. Tq exhibited nuclear fragmentation and inhibited trans-endothelial migration of A498 and Caki-1 cells in a dose dependent manner. Time dependent increase of Annexin V positive cells and sub G0/G1 cell population was observed in both cell lines after Tq treatment. Tq increased the pro apoptotic Bax protein and reduced anti-apoptotic Bcl-2 protein dose dependently in A498 and Caki-1 cells favoring apoptosis. Increasing concentration of Tq decreased the phosphorylation of Akt in both kidney cell types.

**Conclusion:** Our observations suggest effective anticancer activity of Tq in kidney cancer cells which may be mediated by the Akt pathway.

**Publications**


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