

**Thymoquinone rich fraction from *Nigella sativa* and thymoquinone are cytotoxic towards colon and leukemic carcinoma cell lines.**

ABSTRACT

*Nigella sativa* has been used for centuries in Asia, Middle East and Africa to promote health and fight diseases. In this study, the anti-cancer effects of thymoquinone rich fraction (TQRF) extracted from *N. sativa* seeds using supercritical fluid extraction (SFE) system and commercially available thymoquinone (TQ) on colon cancer (HT29), lymphoblastic leukemia (CEMSS) and promyelocytic leukemia (HL60) cells lines were investigated. The concentration that gave 50% inhibition of cell viability (IC<sub>50</sub>) of HT29, CEMSS and HL60 cells treated with TQRF were 400, 350 and 250 µg/ml, respectively. Meanwhile, the IC<sub>50</sub> of TQ was 8, 5 and 3 µg/ml, respectively. Cell cycle analysis shows the increment of apoptosis in a time-dependent manner. However, both TQRF and TQ were not able to arrest the cell cycle phases of the cells. Apoptosis was the main mode of HT29, CEMSS and HL60 cells death induced by both TQRF and TQ. Our findings support the potential use of TQRF and TQ for the treatment of colon cancer and leukemia.

**Keyword:** *Nigella sativa*; Thymoquinone; Supercritical fluid extraction system; Colon cancer; Lymphoblastic leukemia; Promyelocytic. leukemia, cell cycle.