

## Evaluation of ROS Mediated Apoptosis Induced by Tuber Extract of *Dioscorea Bulbifera* on Human Breast Adenocarcinoma

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**Abstract :** Background: To determine antioxidant properties and anticancer activity by ROS and mitochondrial transmembrane potential mediated apoptosis against MCF7, MDA-MB-231, cell line. Methods: Leaf sample was extracted using methanol by microwave digestion technique. The antioxidant properties of the methanolic extract were determined by a DPPH scavenging assay. In vitro anticancer activity, mitochondrial transmembrane potential, apoptosis activity and DNA fragmentation study, as well as intracellular ROS activity of most potential leaf extract, were also determined by using the MDA-MB-231 cell line. In vivo animal toxicity study was carried out using mice model. Results: Methanolic leaf extract has shown the highest antioxidant, as well as anticancer activity, is based on the assay conducted. For the identification of active phytochemicals from methanolic extract, High-resolution mass spectroscopy-LCMS was used. In vitro cytotoxicity study against MCF-7 and MDA-MB-231 cell line and IC 50 value was found to be 37.5µg/ml. From histopathological studies, no toxicity in liver and kidney tissue was identified. Conclusion: This plant tuber can be used as a regular diet to reduce the chance of breast cancer. Further, more studies should be conducted to isolate and identify the responsible compound.

**Keywords :** human breast adenocarcinoma, ROS, mitochondrial transmembrane, apoptosis

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