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 Cytotoxic effects of *Mangifera indica* L. kernel extract on human breast cancer (MCF-7 and MDA-MB-231 cell lines) and bioactive constituents in the crude extract (Article)

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Abstract

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Background: Waterlily Mango (*Mangifera indica* L.) is thought to be antioxidant-rich, conferred by its functional phytochemicals. **Methods:** The potential anticancer effects of the ethanolic kernel extract on breast cancer cells (MDA-MB-231 and MCF-7) using MTT, anti-proliferation, neutral red (NR) uptake and lactate dehydrogenase (LDH) release assays were evaluated. Cytological studies on the breast cancer cells were also conducted, and phytochemical analyses of the extract were carried out to determine the likely bioactive compounds responsible for such effects. **Results:** Results showed the extract induced cytotoxicity in MDA-MB-231 cells and MCF-7 cells with IC₅₀ values of 30 and 15 µg/mL, respectively. The extract showed significant toxicity towards both cell lines, with low toxicity to normal breast cells (MCF-10A). The cytotoxic effects on the cells were further confirmed by the NR uptake, antiproliferative and LDH release assays. Bioactive analyses revealed that many bioactives were present in the extract although butylated hydroxytoluene, a potent antioxidant, was the most abundant with 44.65%. **Conclusions:** *M. indica* extract appears to be more cytotoxic to both estrogen positive and negative breast cancer cell lines than to normal breast cells. Synergistic effects of its antioxidant bioactives could have contributed to the cytotoxic effects of the extract. The extract of *M. indica*, therefore, has potential anticancer activity against breast cancer cells. This potential is worth studying further, and could have implications on future studies and eventually management of human breast cancers. © 2014 Abdullah et al.; licensee BioMed Central Ltd.

Author keywords

[Anticancer activity](#) [Cytotoxicity](#) [kernel extract](#) [Mangifera indica L](#) [MCF-7 cells](#) [MDA-MB-231 cell](#)

Indexed keywords

EMTREE drug terms:

[alcohol](#) [butylcresol](#) [cytotoxic agent](#) [doxorubicin](#) [lactate dehydrogenase](#)
[Mangifera indica kernel extract](#) [neutral red](#) [plant extract](#) [unclassified drug](#)

EMTREE medical terms:

[antineoplastic activity](#) [antioxidant activity](#) [antiproliferative activity](#) [article](#) [breast carcinoma](#)
[cancer growth](#) [carcinoma cell line](#) [cell viability](#) [controlled study](#) [cytology](#) [drug cytotoxicity](#)
[drug identification](#) [drug potentiation](#) [enzyme release](#) [human](#) [human cell](#) [IC 50](#) [mango](#)
[MCF 7 cell line](#) [molecular weight](#) [MTT assay](#) [phytochemistry](#) [seed kernel](#)

MeSH:

[Antineoplastic Agents](#) [Antioxidants](#) [Breast Neoplasms](#) [Cell Line, Tumor](#) [Cell Survival](#)
[Drug Screening Assays, Antitumor](#) [Female](#) [Humans](#) [Mangifera](#) [MCF-7 Cells](#) [Plant Extracts](#)
[Seeds](#)

Chemicals and CAS Registry Numbers:

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