

## Abstract

# Development of Effective Anticancer Drug Candidates against Breast and Colon Cancers <sup>†</sup>

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**Abstract:** Breast and colon cancers are a global health problem and they are responsible for causing a large number of deaths. Both of them rank among the most dangerous types of cancer. DLD-1, MDA-MB-231 and HEK 293T cells were cultured in DMEM medium supplemented with 10% FBS. The cells were seeded into sterile 96-well plates at a density of  $1 \times 10^3$  cells/well. Cancerous cells were exposed to synthesized drug candidates at nine different concentrations for 72 h. The normal human cells were exposed to drug candidates in the 0.001–100  $\mu$ M range for 24 h. All the synthesized compounds showed evidence of enhanced cytotoxic activity against tested cell lines. In general, compounds containing aromatic groups showed more cytotoxic activity compared to compounds containing alkyl groups. Furthermore, a few compounds showed roughly more in vitro cytotoxic activity than the well-known chemotherapeutic agent cisplatin. A lot of new compounds as NHC precursors were synthesized and extensively characterized. The anticancer properties of compounds were tested. Our results demonstrate that a few compounds exhibited promising results against cancerous cell lines that can be warranted for further investigation as a potential anticancer agent.

**Keywords:** Benzimidazolium salt; cytotoxic activity; breast cancer; colon cancer; MDA-MB-231; DLD-1; HEK-293T; IncuCyte; confocal image

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