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## Dicoma anomala enhances the zinc phthalocyanine tetrasulphonic acid (ZnPcS<sub>4</sub>) mediated photodynamic therapy in breast cancer cells

Breast cancer is a form of cancer that affects women and is regarded as the second leading cause of cancer-related deaths. Phyto photodynamic therapy is a promising therapeutic approach adopted in cancer research, which uses plant-derived bioactive compounds in combination with photosensitizers to induce apoptosis in cancer cells. *Dicoma anomala* is an African medicinal plant, that is widely used in the treatment of various diseases. In this research, *D. anomala* extracts were used in combination with zinc phthalocyanine tetrasulphonic acid (ZnPcS<sub>4</sub>) to induce cell death in MCF-7 breast cancer cells. The cells were treated with different concentrations (25, 50 and 100 µg/mL) of methanolic root extract and the dose response results were used to calculate the IC<sub>50</sub> value.(85 µg/mL). Morphological changes were observed using inverted microscope. The lactate dehydrogenase (LDH) cytotoxicity and ATP proliferation assays were performed to determine the cytotoxic effect of the extract and ZnPcS<sub>4</sub> after 24 h of treatment. The morphological results showed a significant decrease in cell population while LDH level was increased and ATP levels were decreased in dying cells.. The outcome of this research suggests the potential medicinal benefits of *D. anomala* and ZnPcS<sub>4</sub> in breast cancer treatment.

### Apply to be considered for a student ; award (Yes / No)?

Yes

### Level for award;(Hons, MSc, PhD, N/A)?

MSc

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