

# Pharmacological Evaluation of Polar Extract of *Chrozophora tinctoria* for Effective Treatment of Cancer: *In Vitro* Qualitative and Quantitative Analysis

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**Background:** Worldwide, cancer is claimed a major public health problem and is another leading cause of death after ischemic heart diseases. Currently, the nutraceuticals and their biologically active phytoconstituents have received immense attention for the prevention and treatment of cancer due to origin authenticity, natural compatibility, and least toxicity.

**Objective:** The contemporary research venture aimed to investigate the anticancer potential of polar fractions of the *Chrozophora tinctoria* plant. The plant was selected due to its wide-ranging therapeutic potential having its role in wound healing, anti-inflammatory, antimicrobial, antineoplastic as well as antioxidant activities.

**Method:** The aerial part of the *C. tinctoria* was extracted with methanol and then fractionated with liquid-liquid extraction by utilizing water, butanol, ethyl acetate, chloroform, and n-hexane. In addition to total phenolic, the flavonoid contents were also determined. Phytochemical analysis was performed and maximum phenolic and flavonoid contents were obtained in chloroform and ethyl acetate fractions.

**Results:** The obtained fractions were assessed for potential anticancer agents by utilizing HeLa and MCF-7 cells. The most active fractions from initial anticancer screening were further investigated microscopically to determine apoptosis, production of reactive oxygen species (ROS) as well as cell cycle arrest (flow cytometry). Interestingly, the maximum cytotoxic activity in cancer cells was observed by ethyl acetate and chloroform fraction.

**Conclusion:** It is concluded that ethyl acetate and chloroform fractions showed the most promising anticancer activity and would be a new treatment option for the most common cancer in females.

**Keywords:** Chrozophora tinctorial, breast cancer, cervical cancer, flow cytometry, reactive oxygen species, flow cytometry.