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Vol: 1 & Iss: 1

Comment on Bioactive Compounds of Calotropis Gigantea for Cancer Treatment

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Citation: Thirumavalavan M. Comment on Bioactive Compounds of Calotropis Gigantea for Cancer Treatment. *Arch Biotech Pharma Res*, 2025;1(1):01-02.

Received: 24 February, 2025; **Accepted:** 14 March, 2025; **Published:** 16 March, 2025

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I write to address the recently published work by Jeyalakshmi et al., entitled "Bioactive compounds of Calotropis gigantea for cancer treatment" an interesting study reporting on the diverse pharmacological properties of Calotropis gigantea (C. gigantea), a member of the Apocynaceae family[1]. Its common name is crown flower or giant milkweed.

This study covers the screening, identification, and characterization of bioactive compounds from C. gigantea that can be used in cancer therapy. C. gigantea contains secondary metabolites such as flavonoids, terpenoids, alkaloids, and phenolic compounds with anticancer properties, as demonstrated by phytochemical research. These bioactive chemicals work through several ways, including inducing apoptosis, inhibiting cell proliferation, suppressing angiogenesis, and modulating immunological responses. It was also demonstrated that C. gigantea drugs have synergistic interactions with traditional chemotherapeutic medicines, improving treatment efficacy and overcoming resistance. Although preclinical evidence is promising, clinical translation of C. gigantea-based medicines remains challenging. These hurdles include improving medication delivery systems, undertaking extensive preclinical and clinical investigations, and assuring regulatory compliance. Chemicals from C. gigantea have been demonstrated to have anticancer properties, making them a promising adjunct to cancer therapies. C. gigantea contains bioactive chemicals that may have anticancer effects and among them calotropin a cardenolide glycoside, is a key bioactive molecule identified from C. gigantea[2]. On cancer cell lines, such as those from breast, lung, and colorectal cancer, it exhibits potent cytotoxic effects[3]. Another bioactive molecule, calotropagenin, has shown strong anticancer action.

A pregnane glycoside called calotropagenin stops cancer cells from proliferating by causing cell cycle arrest and death. Calotropagenin inhibits angiogenesis, which lowers the growth and spread of tumors. One of C. gigantea's promising bioactive compounds is gigantic, a flavanol glycoside. Gigantin has strong antioxidant and anti-inflammatory characteristics, which contribute to its anticancer efficacy. It has been demonstrated that gigantin inhibits the migration of cancer cells and invasion, making it a promising treatment agent for metastatic malignancies. The constituents of C. gigantea chemicals have also shown anti-angiogenic and anti-metastatic characteristics, preventing the creation of new blood vessels (angiogenesis) and the dissemination of cancer cells to distant areas[4].

This study was focused on cell-based screening assays, enzymatic assays for anticancer activity and action mechanism of C. gigantea compounds in cancer treatment. One of the major findings of this study is that they could enhance the effectiveness of treatment and overcoming drug resistance by synergizing with conventional chemotherapeutic drugs. Although C. gigantea chemicals have considerable therapeutic promise in cancer treatment, there are various hurdles that need to be solved for their clinical translation. Comprehensive preclinical investigations are needed to understand the safety characteristics, pharmacokinetics, and appropriate dosage regimens of these drugs.

This study challenges the potential applications of C. gigantea in precision medicine. Given the cancer's heterogeneity and patient variability in therapy responses, tailored treatment techniques that take genetic and molecular aspects into account are crucial for maximizing therapeutic outcomes. Drugs from C.

gigantea are intriguing options for inclusion in individualized treatment plans because of their multitargeted modes of action and potential for synergistic interactions with other medications.

According to this study, it was concluded that compounds from C. gigantea have demonstrated strong anticancer effects in both in vitro and in vivo animal studies. These effects include immune regulation, cytotoxicity, apoptosis induction, and anti-angiogenesis. This study emphasizes the necessity of more investigation into C. gigantea's anticancer properties. Moving forward, it is important to improve the diagnostic accuracy and assay of the phytochemicals of C. gigantea.

1. Ethics Approval and Consent to Participate

Not applicable.

2. Consent for Publication

Not applicable.

3. Availability of Data and Materials

Not applicable.

4. Funding

This study received no funding.

5. CRediT Authorship Contribution Statement

This complete work was done by Munusamy Thirumavalavan.

6. Declaration of Competing Interest

The authors declare that they have no any competing interest.

7. References

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