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In vitro Cytotoxic Potential of *Calotropis gigantea* R.Br. Against Human Cancer Cell Lines

MADHULIKA BHAGAT AND VIKAS SHARMA

See end of the article for authors' affiliation

MADHULIKA BHAGAT
School of Biotechnology, University of Jammu, JAMMU (J&K) INDIA

ABSTRACT

The goal of this research work was to evaluate the *in vitro* cytotoxic potential of the extracts from the traditional medicinal plant *i.e., Calotriois gigantea* R.Br. The extracts were screened for *in vitro* cytotoxicity by means of SRB assay on seven human cancer cell lines: colon cancer cells (COLO 205, 502713), liver cancer cells (HEP-2), prostate cancer cells (DU-145), lung cancer cells (HOP-62), ovary cancer cells (OVCAR-5) and cervical cancer cells (SiHa). Ethanolic extracts and aqueous ethanolic extract did not show significant activity against any of the cancer cell lines at the concentrations of 10µg/ml and 30µg/ml, but at the concentration of 100µg/ml, both the extracts were found active against every human cancer cell line. Aqueous extract was found active against all the human cancer cell lines at the concentration of 100µg/ml, surprisingly this extract showed cytotoxic effect on two human cancer cell lines, *viz.*, 502713 and HEP -2 at the concentration of 10 and 30 µg/ml. These results suggest that the aqueous extract possesses more cytotoxicity against 502713 and HEP-2 than ethanolic extract and aqueous extract.

Key words : *Calotropis gigantea*, SRB assay, Human cancer cells, *In vitro* cytotoxicity.

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Calotropis gigantea R.Br belongs to Asdepiadaceae family, commonly known as milkweed or swallowort is a common wasteland weed and most abundant in the sub-tropics/ tropics and rare in cold countries (Singh *et al.*, 1996). *Calotropis gigantea* is a traditional medical plant (Rastogi and Mehrotra, 1991) with unique properties (Oudhia and Tripathi, 1998) and is used alone or with other medicinal plants (Caius, 1986) to treat common diseases such as fevers, rheumatism, indigestion, cough, cold, eczema, asthma, elephantiasis, nausea, vomiting and diarrhea (Das, 1996). The plant is also a reputed Homoeopathic drug (Ferrington, 1990). The powdered root is used in asthma, bronchitis, dyspepsia and leaves are useful in the treatment of paralysis, swellings, intermittent fevers (Warrier *et al.*, 1996). The plant possesses anti- diarrhoeal activity (Chitme *et al.*, 2004) and the latex of the plant is a rich source of useful components that has medicinal properties and one of the main applications is in controlling bleeding. The plant is considered crude drug of Bangladesh and new oxiopregnane- oligoglycosides named Calotropis A and B have been isolated from the root of *C. gigantea* (Isao *et al.*, 1992). Cardenoloids glycosides calotropin frugoside and 4-O- Beta-D- glucopyransyl frugoside were also obtained as the cytotoxic principles from the root of *C. gigantea* (Kiuchi *et al.*, 1998).This study attempts to determine the *in vitro* cytotoxic effect of *Calotropis gigantea* R.Br. root extract on human cancer cell lines from six different origins. The results would enable more rational exploitation of the plant in both traditional and orthodox medicine.

MATERIALS AND METHODS

The plant was collected from Pounichak region of Jammu district, Jammu J&K, India in the month of June and authentication was done by Dr Yashpal Sharma at the herbarium of the Botany Department, University of Jammu, Jammu. The collected plant material (root part) was chopped, shade dried and ground into powder. Powdered dried plant material was then extracted with different solvents at room temperature.

Preparation of plant extracts:

For the ethanolic extract, dried and powdered plant material (100g) was percolated with 95% ethanol (500ml) and evaporated to dryness under reduced pressure. Hydro-ethanolic extract was prepared by percolating another lot of dried powdered plant material (l00g) with 50% ethanol with water (500ml) and then concentrating it to dryness under reduced pressure. The hot water extract was obtained by boiling powdered plant material