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Anticancer Potential of the *Convolvulus Arvensis*

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Subject: Pharmacognosy

Abstract:
The aim of the study is to check the anticancer activity against IMR -32 and Colo -205 cell lines. The study proceeded using alcoholic and 50% hydro-alcoholic extract of the aerial parts of *Convolvulus arvensis* were screened for anti-cancer activity on various cell lines using Adriamycin and Paclitaxel as reference standards. The result indicated that alcoholic extract possess significant anti-cancer activity against IMR-32 and Colo-205 cell lines.

Key words: *Convolvulus arvensis, anti-angiogenesis, Bindweed*

Introduction:

Convolvulus arvensis Linn. Also known as wild morning glory or as bindweed is a creeping weed widely distributed in Middle East . In India it is found growing widely in waste lands and known as 'Hiranpadi' in Hindi. Field bindweed is a dicotyledonous, persistent, perennial vine of 2m in height of the morning-glory family (Convolvulaceae) which spreads by rhizome and seed[1].

Traditionally used to treat skin ulcers, reducing wounds, rheumatic and painful joints, inflammation and swelling[2] A purified water extract of leaves of bindweed is used to inhibit the growth of tumour cells, growth of blood vessels and enhance immune function[3] .Phytochemical studies on this plant had been limited to the detection of Saponins[4], Flavonoids and caffeic acid [5] alkaloids[6] and lipids[7] and δ-amino levulinic acid[8].Aerial parts[9] indicated the presence of alkanes, alkanols, α- amyrin, campesterol, stigmasterol and sitosterol.

With this background information, the current study was aimed to characterize the anti-cancer activity of the alcoholic extract of *Convolvulus arvensis*.

Fig.1: Convolvulus arvensis

Materials and Methods:

The aerial parts of the plant were collected from the waste land of Amritsar region in the month of October- November and authenticated by Dr. B.K. Kapahi, Taxonomist, Department of Botany, IIIM, Jammu. A voucher specimen was retained and deposited at the crude drug repository of the herbarium of IIIM Jammu. (Vide CDR accession No. 21583).

Preparation of extracts:

The collected aerial parts were shade dried, coarsely powdered and the powder was exhaustively extracted with both ethanol (95%), ethanol (50%) separately using percolator for 16 hours. The extract was drained, filtered and solvent was removed using thin film evaporator. Moreover the hydro alcoholic was lyophilized. Both the were dried in the desiccator for further studies. To prepare the stock solutions, 20 mg of each extract is dissolved in respective concentration of DMSO and RPMI-1640 is added to 100 µl of media. pH is adjusted to 7.2, penicillin was added and sterilized by filtering through 0.2 µ microfilter and kept in refrigerator (2-8°C).

Cell line:

Different cell lines were purchased from RRL, Jammu. Cytotoxic effect of the extracts against different human cell lines was determined by a rapid colorimetric assay, using Sulphorhodamine B dye and compared with 5-Fluorouracil as a positive control.

Cytotoxicity assay:

The principle of assay is Sulphorhodamine B binds with protein basic amino acid residues in

tricholoacetic acid-fixed cells to provide a sensitive index of cellular protein content.
The procedure of the assay involves that the medium with sub-confluent stage (log phase) of growth was selected. Cells were harvested by treating with trypsin-EDTA. Cell density was adjusted to 10,000 cells/ml of the cell suspension. 100 µl of cell suspension is added to each 96 well plate with the help of handy step. The negative control contained no extract and the positive control contained 100 µl of 5-FU. Plates were incubated at 37 °C, in an atmosphere of 5 % CO_2 and 90 % relative humidity for 24 hrs. After 24 hrs 100 µl test material is added to each well of 96 well plates. Again plates were incubated for 48 hrs.

Anticancer activity:
Anti-cancer activity of all the three extracts was tested by in vitro study on different cell lines.
All the extracts were dissolved in DMSO and used in concentration of 100 µg/ml. Adriamycin and Paclitaxel were used as reference standards.

Results:
The 95% alcoholic extract of the aerial parts of *Convolvulus arvensis* has shown significant inhibition on IMR-32 and colo-205 cell viability by 85% and 73%, respectively in comparison to standards used. The results obtained are given in table-1

Table. 1: Effect of extracts of *C. arvensis* on different cell lines:

Cell Line Type				**Neuroblastoma**	**Lung**	**Colon**	
CCL Code	Inst. Code		Conc. µg/ml	IMR-32	A549	Colo-205	HCT-15
		MA001	100	**85**	60	**73**	59
R-209	IIIM CA/P08 A001 IIIM CA/P08 A002	MA002	100	**64**	14	24	42
R-210 Adriamycin			1x10-6M	68	43	50	33
Paclitaxal			1x10-6M	52	17	82	30

MA001- Alcoholic extract, MA002- 50% alcoholic extract

Conclusion:
From the present study, we can conclude that the aerial parts of *Convolvulus arvensis* deserves further study as a potent anti-cancer drug besides being a ubiquitous weed. Approaches can also be made to isolate the most active constituent from extracts with the hope of obtaining a potent anti-cancer agent.

"Cite this article"

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