



## ANTI-CANCER ACTIVITY OF LEAF EXTRACT PREPARATION FROM *IPOMOEA SEPIARIA* AGAINST MCF-7 CELL LINE

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### ABSTRACT

*Ipomoea* is the largest genus with over 500 species in the flowering plant belonging to the family Convolvulaceae. *Ipomoea sepiaria* Koenig ex Roxb. is well known as Lakshmana in Sanskrit distributed throughout greater part of India. The anticancer activity of aqueous extract of *Ipomoea sepiaria* was investigated by MTT assay using MCF-7 cell line. The present experimentation showed that aqueous extract of *Ipomoea sepiaria* when subjected to different concentrations on MCF-7 cells showed IC<sub>50</sub> cell inhibition at about 10 $\mu$ M for 48 hours and about 2 $\mu$ M for 72 hours.

**KEYWORDS:** MCF-7, *Ipomoea sepiaria*, Anticancer activity.

### INTRODUCTION

Plants and their products contain many novel compounds used for many years for human health. The ethanolic extract of *Ipomoea sepiaria* leaves exhibited the presence of alkaloids, carbohydrates, flavonoids, proteins, phenol, phytosterols, saponins, tannins and terpenoids.<sup>[1]</sup> The ethanol extract of *Ipomoea sepiaria* leaves were shown potential bioactive compounds using phytochemical analysis based on previous studies. *Ipomoea sepiaria* is one of the plants in Dashapushpam associated with a Deity in Hindu Mythology used as ingredients in various Ayurvedic formulations.<sup>[2]</sup> The plant is used in folklore practice in lithiasis, gonorrhoea, febrifuge, vomiting, indigestion, chronic skin diseases, intermittent fever, flatulence, cough, leucoderma, urogenital diseases etc.<sup>[3,4]</sup> The plant is culturally and medicinally significant to the people of Kerala state.

Cancer is a group of diseases that can affect any part of the body with more than 100 types.<sup>[5]</sup> The plant contains natural antioxidants that show beneficial effects on human health. The

extracts show ROS mechanism that is responsible for the initiation of biomolecular damage of harmful molecules causing negative effects on the body.<sup>[6]</sup> MCF-7 breast cancer cell line will express substantial levels of estrogen receptor (ER) alpha mimicking the majority of invasive human breast cancers.<sup>[7]</sup> There were no reports on anticancer activity of aqueous extract of *Ipomoea sepiaria* that was investigated by MTT assay using MCF-7 cell line.

## MATERIALS AND METHODS

### Collection of plant material

Fresh leaves of *Ipomoea sepiaria* were collected from surrounding areas of Visakhapatnam, India. The dust particles were removed by washing leaves of *Ipomoea sepiaria* with double distilled water. The leaves were shade dried and then grounded to powder using mortar and pestle. The obtained powdered samples were then stored in an airtight closed bottle and were used for further experiments.

### Preparation of plant extract of *Ipomoea sepiaria*

About 20gms of the plant powder of *Ipomoea sepiaria* was taken in 250 ml Erlenmeyer flask. The material was boiled with 100 ml of double distilled water, filtered with Whatman Filter paper no. 1 after cooling and was stored at 4°C for further experimentation.

### Anticancer Activity of *Ipomoea sepiaria* against MCF-7 cell lines using MTT Assay

To investigate the *in vitro* inhibitory effects of the aqueous extract from leaf extract of *Ipomoea sepiaria*, MCF-7 (Breast cancer, malignant) procured from NCCS, Pune, India and sensitivity of MCF-7 to *Ipomoea sepiaria* were determined by the MTT colorimetric assay. About 5000 to 10000 cells approximately in 100 µl MEM media (MEM199, Sigma, India) per well was seeded in a 96 well plate and incubated at 37°C, 5% CO<sub>2</sub>. The cells were exposed to leaf extract *Ipomoea sepiaria* at 6 concentrations 0µM, 1µM, 2µM, 5µM, 10µM and 20µM. The cells were then treated with, 20µl of freshly prepared MTT reagent (5mg/ml in PBS) was added and then DMSO (200 µl) was added to each well to dissolve the formazan crystals. The absorbance (OD) of the culture plate was read at a wavelength of 492 nm on an ELISA reader, Anthos Biochrom 2020 ELISA Reader. The percentage of residual cell viability were determined based on the absorbance (OD) obtained from ELISA Reader.

## RESULTS AND DISCUSSIONS

### Anti cancer activity of *Ipomoea sepiaria* against MCF-7 cell line MTT assay

The anticancer activity of aqueous extract was investigated by MTT assay. The present experimentation showed that aqueous extract of *Ipomoea sepiaria* when subjected to different concentrations on MCF-7 cells showed IC<sub>50</sub> cell inhibition of at about 10 $\mu$ M for 48 hours and about 2 $\mu$ M for 72 hours (Table 1, Figure 1).

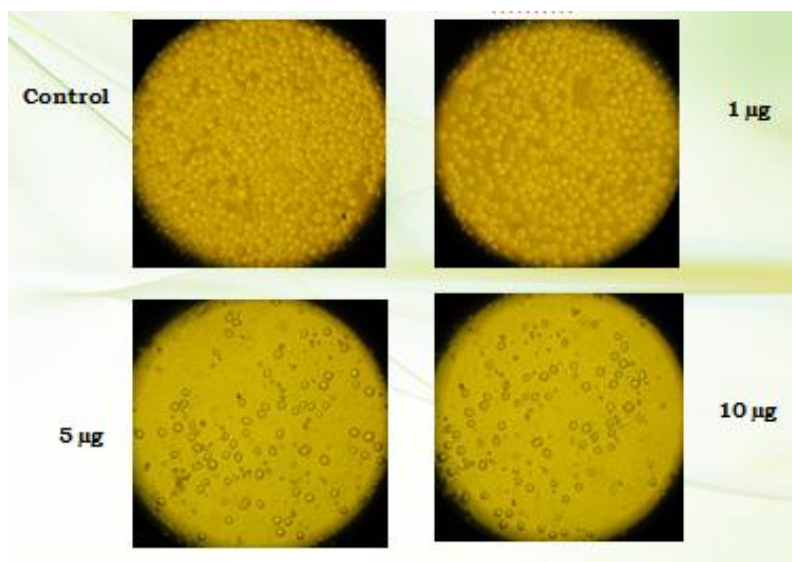


Figure 1: Cultures of MCF-7 cells for 48hours *Ipomoea sepiaria* extract treatment

Table 1: Evaluation Cytotoxic Property Of The Extract On MCF-7 Cells By MTT Assay

Time	Concentration	raw data A1	raw data A2	raw data A3	AVERAGE	% Survival	SD
48h	control	1.09654	0.92191	1.07809	1.03218	100	9.59367
	1 $\mu$ M	0.86448	1.13451	1.02116	1.00672	97.4537945	13.55906
	2 $\mu$ M	0.65793	0.78388	0.74106	0.72762	69.5444746	6.4038
	5 $\mu$ M	0.59698	0.6005	0.73048	0.64265	61.0474133	7.607943
	10 $\mu$ M	0.50129	0.42987	0.50576	0.47897	44.6790798	4.25826
	20 $\mu$ M	0.38237	0.46297	0.36625	0.40386	37.1683201	5.182147
72h	control	1.04878	0.94862	1.00259	1	100	5.012823
	1 $\mu$ M	0.83861	0.94292	0.83757	0.87303	87.3032347	6.052363
	2 $\mu$ M	0.52932	0.51427	0.50026	0.51462	51.4616848	1.453345
	5 $\mu$ M	0.40374	0.34925	0.38869	0.38056	38.0556997	2.813951
	10 $\mu$ M	0.30877	0.30773	0.26414	0.29355	29.3547829	2.547222
	20 $\mu$ M	0.29807	0.22756	0.22349	0.24971	24.9706826	4.19315

Cancer is one of the major health problems and the second leading cause of death in humans after cardiovascular disease. However few medicinal plants have concerned to investigate by the scientists that provide the remedy for neoplasm like cancer.<sup>[8]</sup> Several plants like *Pueraria mirifica*<sup>[9]</sup>, *Cynodon dactylon*<sup>[5]</sup>, *Embllica officinalis*<sup>[10]</sup>, etc are investigated for inhibition the

growth of estrogen-positive human breast MCF-7 cells. There were no reports investigated previously on anticancer activity of aqueous extract from *Ipomoea sepiaria* was by MTT assay using MCF-7 cell line.

## CONCLUSION

Very few reports have been stated about the anticancer activity of *Ipomoea sepiaria* against cancer cells. Taking the cited facts into consideration the present study showed that an aqueous extract of *Ipomoea sepiaria* had considerable anti-cancer activity against cancer cell lines. These results have shown us a path to conduct *in vivo* experiments to evaluate the extract of Indian *Ipomoea sepiaria*.

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