



INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

ANTI MITOTIC ACTIVITY OF CINNAMOMUM MALABATRUM LEAVS ON GERMINATING BENGAL GRAM SEEDS

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ABSTRACT

Cinnamomum malabattrum ethyl acetate fraction of methanolic extract was versatile substrates, which was identified by the various chemicals, especially flavonoids, Phenolic compounds, earlier, TLC,HPTLC studies were evidence for that, the above fraction here we subjected to the Pharmacological study, as per knowledge of literature review and compounds present in the fraction, it was subjected to anti cancer activity in that anti mitotic activity was done on the germinating Bengal grams, the study provided strong evidence for supporting the fraction for anticancer activity, here we selected three sample sizes that is 5mg, 10mg and 20mg, these samples were sprayed on the germinating Bengal grams for 5 days meanwhile observing growth of the hypocotyls and taking its average measurements and are compared with control and applied statics for best results, out off three doses 20mg was shown maximum anti mitotic effect, these results are also strong evidence for plant having anti cancer activity, hence I was continuing my research work for further evidence

KEYWORDS: anti mitotic activity, Bengal grams, germination, Cinnamomum malabattrum

INTRODUCTION

Cancer is one of the most complicated diseases across the world wide. Most of the anticancer or chemotherapeutic drugs act by interrupting cell division (mitosis) in fast-dividing cells. The inhibition of mitosis in gram seed root tip is considered as a sensitive and easy method for the determination of cytotoxicity of drugs. A study about the inhibition of mitosis in gram seeds proved that there is a disturbance in the mitotic spindle formation and also inhibition of cell plate formation which may be due to the arrest of cell division at G2 phase or S phase. The inhibition of mitosis by the test compound is beneficial for their possible applications for life-threatening diseases such as cancer. In view of above, we have planned to evaluate the anti-mitotic activity of test compound i.e. ethyl acetate fraction of methanol extract of

Cinnamomum malabratrum usinggerminating Bengal gram seed method

Anti mitotic activity (Using germinating Bengal gram seeds)

MATERIALS AND METHODS

Materials

Bengal gram seeds (*Cicer aratinum*) (locally available in the market)

Petri-dishes (Himedia, Mumbai, India)

Solvents: methanol,water, ethyl acetated fraction of cinnamum malbtram

Extracts: (1ml conc. Of 5mg/ml, 10mg/ml, 20mg/ml)

Bengal Gram Seeds: The high quality germinating bengal gram seeds were purchased from local market for the evaluation of anti-mitotic activity, germinating Bengal grams are the best method to evaluate anti cancer activity (anti mitotic) and also which is simple, effective method to know the anti mitotic activity, as per earlier study Cinnamomum malabratrum extract has the flavonoids and phenolic compounds, these chemical compounds act on cell cycle specific phase mostly on the mitotic phase,

Procedure

Bengal gram seeds of a good quality were taken and soaked overnight with water to hasten the germination process. The next day the seeds were distributed in a group of 10 each in petri dishes on moistened filter paper. Fraction were prepared in solvents at concentrations ranging from 1ml and added to the filter paper in the petridishes. One petridish served as solvent control, and one served as paclitaxel (positive) control. The seeds were allowed to germinate for 7 days and care was taken to moisten the filter paper with control and extracts every 24 hours. The length of the radicals was measured in cm at the end of 7th day and percentage mean values of the solvent control treated and percentage inhibition is growth is calculated.

Test compound: ethyl acetate fraction of methanolic extract was selected for the evaluation of antimitotic activity using bengal gram seeds, among the extracts methanolic extract in that ethyl acetate fraction has more intensity of peaks in the hptlc study, further study we were selected these fraction

Preparation of test suspension: As the compound is insoluble in water, we prepared suspension of test compound to evaluate the anti-mitotic activity using standard methods. A test concentration of 5, 10 and 20 mg/ml were prepared and sprayed on the germinating Bengal grams for the study.



Sample dilutions

Table: Antimitotic activity of test and control

Anti-mitotic Activity of compounds				
Radical length of Bengal gram seeds (in cm)				
Control	Sample 5mg/ml	Sample 10mg/ml	Sample 20 mg/ml	Paclitaxel control
5.10	1.2	1.02	0.92	0.76
4.80	1.3	0.92	0.78	0.50
5.09	1.2	1.30	0.86	0.23
4.78	1.4	0.96	0.98	0.34
5.21	1.3	1.23	0.75	0.76
5.32	1.5	1.22	0.67	0.67
4.75	1.3	0.89	0.77	0.64
5.20	1.4	1.07	0.67	0.83
4.94	1.5	1.04	0.83	0.81
4.87	1.7	0.96	0.69	0.74
Mean	5.00	1.38	1.05	0.79
SD	0.20	0.154	0.140	0.10
% inhibition		77.40	84	89.20
p value		<0.001	<0.001	<0.001



Control

Sample 5mg

Sample 10mg

Sample 20 mg



Paclitaxel

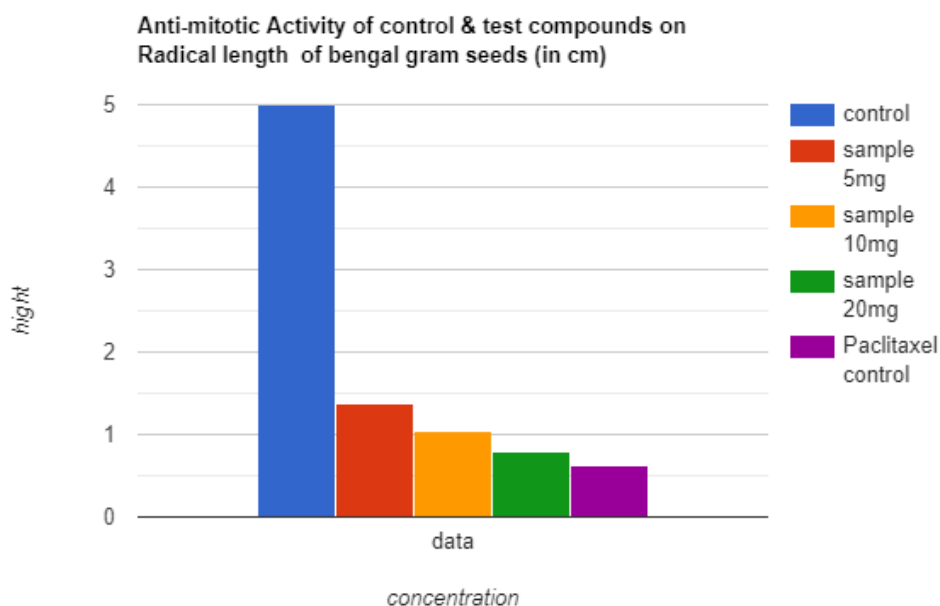


Fig : anti mitotic activity of extract and Paclitaxel control

RESULTS AND DISCUSSION

In the present study, we have evaluated the antimitotic activity of ethyl acetate fraction of methanolic extract of *Cinnamomum malabatum* leaves using germinating Bengal gram seeds. The test compound showed the antimitotic activity with different concentrations and was found to be as dose dependent manner. The results were showed in table .

The test compound is capable of inhibiting the germination of Bengal gram seeds 77.40%, 84% and 89.20% with the doses of 5, 10 and 20 mg/ml respectively indicating the potential anti-mitotic activity of the test compound. In present study, the test compound showed significant effect as anti-mitotic in comparison with the Paclitaxel control (96.60%) and this is benefit result for inhibiting the growth of cancer cells.

STATISTICAL ANALYSIS:

All the experimental values were expressed as mean \pm SD (N=10). One-way analysis of variance (ANOVA) and Dunnett's test were used to compare means from the control group and each of the test groups and the statistical significance was judged at the 0.05 probability level.

CONCLUSIONS

The present study results proved that the ethyl acetate fraction of methanolic extract of *Cinnamomum malabatum* is having potent anti-mitotic activity against the germinating gram seed method.

The inhibition of mitosis by the test compound is beneficial for their possible applications for life-threatening diseases such as cancer. Thus, we suggest that the cytotoxic action of test compound can involve disturbance of mitotic processes in the fast-dividing cancer cells which will be beneficial for cancer management.

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