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SYNTHESIS OF CHEMICAL MOIETIES AND INVESTIGATION OF IT'S PRELIMINARY ANTICANCER ACTIVITY

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ABSTRACT

Cancer is one of the most frequently growing causes of mortality worldwide. The present research avoids the use of different animal models for Preliminary anticancer activity tested by synthesis of different chemical moieties. Preliminary anticancer screening was performed by phytotoxic assay which was carried out to find out the potent drug which shows the promising cell growth inhibitory activity. Mung seeds were selected for the Phytotoxic Bioassay which shows the phytotoxicity that compared with standard antimitotic drug (colchicine 100 PPM and 1000 PPM) The drug colchicine shows the promising anticancer activity or cytotoxicity that so it is selected. The activity screened by laboratory based preliminary antineoplastic assay model. The Phytotoxic Bioassay was selected because this is easy to done and give fastest promising results.

MATERIALS AND METHODS[7]

I. For synthesis of BenzylideneAcetophenone:

1) Chemicals requirements :

Acetophenone, Sodium hydroxide, Spirit,Benzaldehyde, water.

2) Equipment and apparatus:

Bolt head flask, Mechanical stirrer, Water bath.

3) Method for synthesis of Benzylidene Acetophenone :

Claisen Schmidt Reaction PROCEDURE

Place a solution of 2.2 gm of sodium hydroxide in20 ml water and 10gm of rectified spirit in a 500ml bolt head flask provided with a mechanical stirrer. Immerse the flask in a both of crush dice, pour in 5.2gm of freshly prepared distilled acetophenone, start the stirrer and then add 4.6 gm of pure benzaldehyde. Keep the temperatureof mixture at about 25^0C and stir vigorously until the mixture so thick that stirring is no longer effective. Remove the stirrer and leave the reaction mixture in an ice chest or refrigerator overnight, filter the product with suction on a Buchner funnel or a sintered glass funnel, wash with water until the washing are spirit warmed to 50^0C. The yield of pure BenzylideneAcetophenone M.P. is 7. Neutral to litmus and then with 2ml of ice cold rectified spirit. The warmed to 50^0C. The crude product after drying in air,weight 8.3 gm and melts at 50-54^0C. Recrystalize from rectified 7 gm. This substance should be handled with great care since act as a skin irritant.

I. For synthesis of Dibenzylacetone:

1) Chemicals requirements:

Sodium hydroxide, Water, Alcohol,Benzaldehyde,Acetone,Cold water, Ethyl acetate .

2) Equipment and apparatus:

Round Bottom Flask, Clonical Flask, Stirrer

3) Method for synthesis of Dibenzyalacetone :

Claisen Schmidt Reaction

PROCEDURE

In a 50 ml of conical flask, place a cold solution of 5 gmofNaOH of 5gm of NaOH in 50 ml of H_2O and 40mlof alcohol. Stir the content of flask, add a mixture of 5.3 gm (5.1ml) pure benzaldehyde and 1.5gm (1.9ml) of acetone. Shake frequently and maintain the temperature at 20 -21^0 C. for 1 min. by emulsion of flask in a both of cold H_2O.

Filter off ppt. of dibenzalacetone at a pump and wash it with cold H_2O to estimate the alkali completely as possible By the solid at room temperature upon filter paper to constant it and recrystalize from not ethyl acetate.

PHYTOTOXIC BIOASSAY:

Reagents and Chemical:

Benzylidene Acetophenone, Dibenzylacetophenone, Colchicine, Distilled Water, Bleaching powder (Potassium Hydroxide) ,Mung bean seeds, Tap water, Autoclaved distilled water, Whatmann filter paper.

Equipment and Apparatus :

Analytical balance, Petri plates, Whatmann filter paper.

Sterilization of Seeds :

KOH (Potassium Hydroxide) solution was prepared in a beaker. Mung seeds were put in it for 2 to 3 min. rinsed with autoclaved distilled water and finally dried them.

PHYTOTOXICITY ASSAY :

Experiment consisted of two Concentration (100 and 1000 PPM) of drug solution. Whatmann filter paper were placed in each petri plates and 5 ml of each concentration was added. To each petri plate 10 Mung seeds surface sterilized with potassium hydroxide were placed. In control plate 5 ml of tap water added. Standarad control made by using Colchicine. Germinated Mung seeds were counted every day from 1st to 4th days. The plate were sealed with cello tape to avoid moisture loss and placed at Room Temperature root length was measured on 3rd and 4th days of incubation.[1] Results are mentioned in table.

ILLUSTRATIONS:

Table no.1:Result of preliminary anticancer activity.

Sr.No	Drug	Concentration In PPM	No. of Mung seeds and Root length of each seed(cm)										Average No.of Root length	% Root Growth
			1	2	3	4	5	6	7	8	9	10		
1	Colchicine	100	0.4	0.6	0.3	0.4	0.5	0.2	0	0.6	0.3	0	0.33	8.99
2	Colchicine	1000	0.5	0.4	0.3	0.2	0	0.4	0.4	0.5	0.6	0.3	0.36	9.80
3	Benzylidene Acetophenone	100	1	1.5	1.4	2.1	1.9	3.5	2.9	3	3.1	2.9	2.33	48.44
4	Benzylidene Acetophenone	1000	2.8	2.8	3.2	3	2.6	2	2.7	3	2.5	3.2	2.78	57.79
5	Dibenzylacetone	100	4.5	4.2	3	3.6	3	2.5	1.3	3.5	2.8	2	3.04	60.55
6	Dibenzylacetone	1000	3.5	3.6	4	2.6	3.5	3.1	3.6	3	3	3.2	3.31	65.93
7	Control (water)	_	3	5.4	6	3.5	4.7	6.1	4	5.2	5.8	6.5	5.02	100

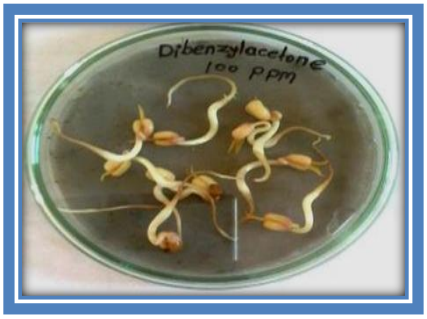
IMAGES:


Benzylidene
Acetophenone
100 PPM


colchicine 1000 PPM


Benzylidene
Acetophenone
1000PPM

Fig.No.1COLCHICINE1000PPM Fig. No.2COLCHICINE 100 PPM Fig.No.3BENZYLIDEN ACETOPHENONE 1000 PPM Fig No.5DIBENZYLACETONE 100 PPMFig. No. 6 DIBENZYLACETONE 1000PPM Fig.No. 7 Water Control. Fig.No.4BENZYLIDENE ACETOPHENONE 100 PPM



GRAPHICAL REPRESENTATION:

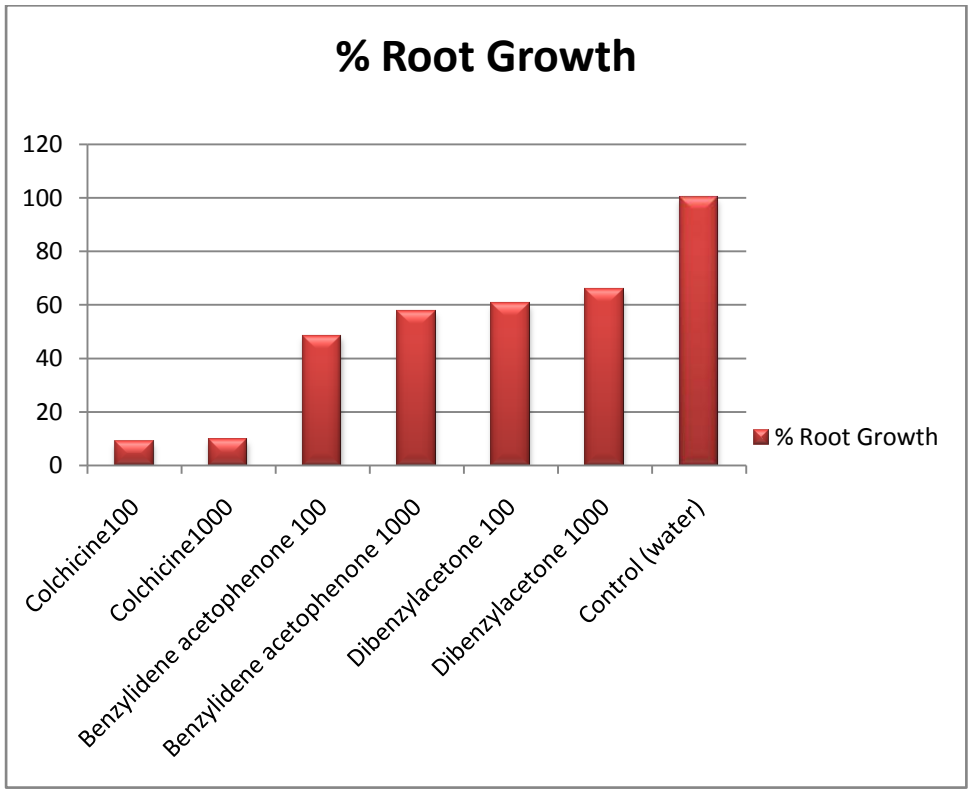


Fig. no 9 Graphical Representation of phytotoxic bioassay

RESULT AND DISCUSSION

The present study explores the potent antiproliferative activity which may be either because of a direct cytotoxic effect of the drug on normal phytocells or restriction of cell division in normal cell cycle. For phytotoxic bioassay,Benzylidine Acetophenone shows 48.44 % and 57.79 % percent root growth as compared to the given antimitotic drug (Colchicine 100 PPM and 1000PPM) respectively.

CONCLUSION

From above results it is concluded that performed different synthesis of chemicals moieties and screened anticancer activity by phytotoxic bioassay using mung bean seeds and which shows promising cell growth inhibitary activity. The antimitotic drug colchicine (100 PPM and1000PPM) shows Phytotoxicity.

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