Report of the Minor Project submission as part of Eleventh plan

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Title

A study on in vitro propagation of a rare folk medicinal plant, "*Kaempferia galanga*,L".

By

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TITLE OF THE PROJECT : A study on in vitro propagation of a rare folk medicinal plant, "*Kaempferia galanga*,L".

OBJECTIVES OF THE PROJECT :- Medicinal plants are sources of important therapeutic aid for alleviating human ailments. With increasing realization of the health hazards and toxicity associated with the indiscriminate use of synthetic drugs and antibiotics, interests in the use of plants and plant based drugs has revived throughout the world. However a large number of medicinal plants remain to be investigated for their possible pharmacological value. Most of the pharmaceutical industry is highly dependent on wild populations for the supply of raw materials for the extraction of medicinally important compounds. Due to lack of proper cultivation practices, destruction of the plant habitats and the illegal and indiscriminate collection of plants from these habitats, many medicinal plants are severely threatened. Here comes the importance of the present work.

As most of the traditional medicinal plants are in a stage of being extinct, the conservation of such species is everybody's duty. Since the easier way to produce the plants in large scale, the tissue culture method has been adopted in the present study.

ACHIEVEMENTS FROM THE PROJECT :- A simple protocol for the micropropagation of the plant and through this technique the plant can be propagated in large scale.

SUMMARY OF THE FINDINGS:- The axillary buds taken from the rhizome was used for initializing the cultures. The media used for culture was Murashige and Skoog media. Different combinations of hormones, Indole Acetic Acid and Kinetin etc were tried, but only in small quantities responded positively. IAA 1mg/l and Kinetin 2 mg/l gave good results.

The major problem faced was the contamination in the cultures. Since rhizome only could be used as explants, the fungal and bacterial contamination was more in the cultures. The yield of the culture was not

satisfactory.

The MS medium with different hormonal combination was used for initiating multiple shoots in the present study. Among the different explants tested, (leaves, nodes, internodes etc.) positive response was exhibited by nodal explants.

Single were induced when the explant was inoculated in the medium with combinations of auxin and cytokinins. Rhizome segments were used to initiate cultures on MS medium supplemented with various combinations of KIN with IAA. The multiple shoot initiation was noticed in the medium with 0.2 mg/l IAA and 0.2 mg/l KIN. In Most of the other combinations culture establishment was in the form of clustered shoots from proliferated callus. The combination of IAA produced only callus and occasional shoot elongation. No morphological variant among the regenerated plants was observed.

When 2, 4-D (0.2 mg/l) was used, profuse callusing was observed in the medium. Sub culturing this callus in MS medium fortified with IAA and BA (0.2 mg/l each) showed development of multiple shoots.

The use of other explants showed little or no response as compared to rhizome explants. Some combinations showed little callus development (IAA, 0.5 mg/l with BA 0.75 mg/l). When these calli were sub cultured for shoot induction, the response was unsatisfactory.

CONTRIBUTION TO THE SOCIETY:- The experimental plant comes under the group of medicinal herbs and the availability of the plant is very less. But through this protocol we can produce the plants in large scale and if any variation in the genetic make up is there in the micropropagated plant, it can be exploited for the production of other useful products so that the plant can be utilized to full extent.