Conservation of selected red listed medicinal plants through *invitro* propagation

Summary

Plants are rich sources of pharmaceutically important compounds; but there is a need to synthesis these compounds within laboratory conditions. Micropropagation is an important technology since many secondary plant metabolites can't be synthesised chemically. Many plant species are undiscovered and their medicinal properties unknown; and even the medicinal remedies past down from generations are being lost. Further research and conservation of all plant species including medicinal plants is needed to preserve nature's natural drugs.. Advances in plant tissue culture will enable rapid multiplication and sustainable use of medicinal plants for future generations. The project mainly aimed to develop standard method to conserve the selected red listed plants such as *Kaempferia galanga , Andrographis paniculata and Aegle marmelos through invitro propagation using various expalts.*

A protocol was developed for invitro propagation of *Kaempferia galanga* using MS medium for shoot multiplication. The basal medium used was Murashigue and Skoog medium containing all salt and vitamins, 30 g/l sucrose, 8g/l Agar which was were variously supplemented with Benzyl amine individually and in combination with Indole 3 Acetic Acid (IAA)and Indole-3 butric acid (IBA). Rooting was induced by placing in rooting medium containing half strength MS supplemented with various concentration of auxins (IAA,IBA) singly for rooting.

We can conserve the red listed medicinal plant *Kaempheria galanga* by in vitro propagation method. It is very effective, fast and easy method to produce such plants in mass. For this the rzhizome can be used for the best result and MS medium supplemented with 1.0 mg/l BA and 0.1 mg/l IAA is more suitable to provide large number of multiple shoots.

Nodal explants of *Andrographis paniculata* was propagated in Murashigue and Skoog medium containing all salt and vitamins, 30 g/l sucrose, 8g/l Agar and supplemented with Benzyl amine, IAA etc individually and in combination at various concentration. Regenerated micro shoots were placed in rooting medium containing half strength MS supplemented with various concentration of auxins IAA singly for rooting.

Analysis of morphogenic responses of nodal explants to various concentrations of hormones shown that medium supplemented with BA and IAA alone showed very poor growth but that with combination of these two exhibit good proliferation rate. Here the nodal segments exhibited initial enlargement and followed by proliferation of shoots within 4 weeks of inoculation .The formation of auxiliary shoots were increased with increase in cytokinin to auxin ratio.

It can be concluded that the invitropropagation using nodal explant was showing maximum generation of shoots with high cytokinin to low auxin ratio. All transplanted plants showed normal morphological and growth characters. This is a rapid method of regeneration that can be applied for mass multiplication of important medicinal plants .This can also be exploited for genetic manipulation studies.

Even though the *in vitro* propagation is a tedious task due to many reasons the successful propagation of *Aegle marmelos* can be achieved through the nodal explants by using MS medium fortified with Kinetin and IAA(2 -1 mg/l) each.. The nodal explants of tree were used to initiate cultures. Two cytokinins, *viz.*, 6-benzylaminopurine (BAP) and kinetin (Kn) were used in varied concentration (0.1–2 mg/l) for shoot multiplication. BAP (2 mg/l) was found better than Kn, where a 3-fold increase in the number of shoots was recorded in 4 weeks. A synergistic influence of cytokinin and auxin was also observed in the present study. A combination of 0.5 mg/l BAP and 0.1 mg/l IAA induced the formation of maximum number (4.5) of shoots (2.5 cm). For rooting of *in vitro* shoots, different auxins, namely, NAA, IAA and IBA (0.1–2 mg/l) were tested. IAA (0.01 mg/l) was found better than NAA and IBA. It was concluded that elite cultivars of bael can be micropropagated, without undergoing callus phase, using the BAP (0.5 mg/l) plus IAA (0.1 mg/l) for shoot multiplication and IAA (0.1 mg/l) for rooting, to produce true-to-type *in vitro* plants. The *in vitro* raised plantlets were acclimatized with 60% success.