# CHAPTER 6

# Summary and Conclusion

# SUMMARY AND CONCLUSION

The present studies were carried out on two medicinally important tree species of bignoniaceae family, *Oroxylum indicum* (V.) and *Stereospermum suaveolens* DC. These trees face problems in natural regeneration as they have low percent of seed germination and are exploited for their plant parts. The roots of both the plants are used for preparation of Dashmoola and Chywanprash and hence indiscriminately harvested from wild, which has now placed them under threatened category.

The experimental studies were divided into three sections, and in the first, seed germination studies were carried, to generate large number of seedlings in a suitable substrate. These seedling explants as well as explants procured from well-developed plants were used *in vitro* regeneration studies, which is described in the second section. This section describes in details the establishment and multiplication of shoot cultures in MS and WPM media fortified with individual cytokinins, combination of two cytokinins and cytokinins with auxins. The microshoots were excised and placed in half and full-strength MS and WPM liquid and static medium supplemented with IBA and NAA for rooting. *In vitro* plantlets were developed and hardened utilising different planting substrate. The third section describes synthetic seed studies in which *in vitro* nodes were encapsulated in different matrices, stored and placed on various regenerative media and evaluated for their potency to form plantlets.

The following conclusions are drawn from the results obtained from different sections in the two species.

***Oroxylum indicum***

- In *O. indicum* maximum percent of seed germination was recorded in cocopeat substrate, in which healthy seedlings developed.
- Cotyledonary node and nodal explants were suitable for regenerating shoots, but nodal explants resulted in healthy shoot formation out of all the different explants utilised for establishing cultures.
- Out of the three cytokinins tried for shoot induction, MS and WPM medium supplemented with BAP was effective, as maximum shoot number (2.0±0.9) was obtained from cotyledonary node explants in MS+BAP(8µM) after 12 weeks.
- Multiple shoots were formed in MS medium fortified with BAP (8µM) with TDZ (0.25 µM) and in WPM supplemented with BAP (16µM) +IAA (1µM) from nodal explants.

- Cotyledonary node explants resulted in maximum number of shoots via indirect organogenesis in MS medium fortified with BAP (4µM) and $GA_3$ (1µM).
- Half strength WPM liquid medium fortified with IBA at 10 µM was optimum for root induction compared to NAA.
- Hardening of plantlets was successfully done in sand substrate, and these plants were transferred to soil and grown in botanical garden.
- *In vitro* nodes were suitable propagule for synseed formation.
- The development of shoot and root (plantlet) was observed from *in vitro* nodes encapsulated in ½WPM+BAP (16µM) + IBA (0.1µM) matrix, when placed on ½ WPM regenerative medium fortified with NAA (5µM) after 15 days of storage.

***Stereospermum suaveolens***

- *In S.suaveolens* also cocopeat was a suitable substrate in which maximum percent of seed germination was recorded.
- Out of the four different explants utilised for establishing shoot cultures, cotyledonary node and nodal explants were suitable for regeneration. .
- WPM medium fortified with Kn (8µM) was effective cytokinin to induce maximum shoots after 12 weeks from nodal explants.
- MS medium supplemented with a combination of BAP (8µM) and TDZ (0.2µM) resulted in forming optimum number of healthy multiples through nodal explants.
- Half strength MS liquid medium supplemented with IBA (2.5µM) induced maximum number of roots.
- The plants were hardened successfully with 100% survival in Cocopeat:Soil substrate under greenhouse conditions.
- In *S. suaveolens* development of shoot and root (plantlet) was observed *in vitro* nodes encapsulated in half MS medium supplemented with Kn (8µM) matrix and placed on MS regenerative medium containing NAA (2µM) after 15 days of storage.

The overall conclusion drawn from the results was that large number of seedlings of *O.indicum* and *S.suaveolens* can be generated in cocopeat substrate. Nodal explant was the suitable explant for establishing and multiplication of shoot cultures. *In vitro* nodes can be used as propagule for synseed preparation which can help in conservation of these important species.