

**ISSR based evaluation of genetic stability in somatic embryo derived plantlets of
Pterocarpus marsupium Roxb.**

Radhika Tippani¹ and Christopher Thammidala^{1,2}

¹Department of Biotechnology, Kakatiya University, Warangal 506 009, Telangana.

^{1,2} Department of Biotechnology, Kakatiya University, Warangal 506 009, Telangana.

Email: tcreuben@gmail.com

Pterocarpus marsupium Roxb. (Fabaceae) is one of the most valuable medicinal tree, commonly known as Indian kino tree. It is a rich source of secondary metabolites and widespread use in various herbal preparations. An efficient protocol for *in vitro* regeneration through direct somatic embryogenesis has been developed in this tree species. The regenerated plantlets were evaluated for their genetic stability. Immature cotyledons were cultured on 2,4-dichlorophenoxyacetic acid (2,4-D), naphthalene acetic acid (NAA) individually and 2,4-D in combination with kinetin (Kn) or benzyladenine (BA). High frequency of somatic embryogenesis (83.33) with maximum number of somatic embryos (24.2 ± 0.98) were observed in 8 days old cotyledons cultured on MS medium supplemented 3% sucrose and 2,4-D ($9.05 \mu\text{M}$) in combination with Kn ($2.32 \mu\text{M}$). Sixty one percent of mature somatic embryos developed into plantlets on half strength MS medium supplemented with $5.80 \mu\text{M}$ gibberellic acid. The various stages of development during somatic embryogenesis include globular, heart, torpedo stages as revealed by the stereomicroscopic and histological studies of explants. Plantlets derived from somatic embryos were successfully acclimatized in the greenhouse with a survival rate of 70%. Among the survived plantlets, 6 plantlets were randomly selected for inter-simple sequence repeat (ISSR) analysis. The amplified products were monomorphic across all the regenerated plants and similar to the mother plant. This homogenous amplification profile confirmed the genetic stability of the tissue culture raised Indian kino tree plantlets.