

RESEARCH PAPER:

Micropropagation of *Talinum cuneifolium* (Vahl.) Willd. through petiole culture

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SUMMARY

A simple and reliable protocol was developed through leaf petiole explant of *Talinum cuneifolium* for multiple shoot regeneration. This leafy vegetable tuberous shrub has been successfully *in vitro* propagated on MS (Murashige and Skoog) nutrient medium. The effect of auxins (IAA, NAA, IBA) and cytokinins (BA, Kn) were examined singly and also in different combinations and concentrations. IBA at 0.5 mg l⁻¹ proved better results by achieving light brown coloured compact calli with roots. Shoot regeneration was succeeded by alone and both combinations of auxins and cytokinins. High frequency (56.04 ± 0.05) of shoot regeneration was achieved using BA at 2 mg l⁻¹ alone and maximum mean length (2.72 ± 0.05) of the shoots were established in the medium fortified with the combination of BA 1 mg l⁻¹ + Kn 2 mg l⁻¹. Elongated shoots were excised and sub cultured for rooting on half strength MS medium fortified with 1 mg l⁻¹ IBA. High frequency (85.70 ± 0.07) regeneration of roots with maximum mean number (12.46 ± 0.02) and maximum mean length (4.60 ± 0.01) were established. The *in vitro* regenerated plantlets were successfully acclimatized in paper cups containing vermiculite, then transferred to lab and green house. Hardened plants were transplanted in to sand and soil (1:1) and supplied ¼ strength MS medium for highest (85 to 90%) survival rate. An attempt was also made to determine the extent of clonal purity of the *in vitro* regenerated plants at the biochemical level by employing peroxidase isozyme as marker, in order to get an insight into the impact of somaclonal variations in the course of their regeneration.

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Key words :

Micropropagation,
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Talinum cuneifolium (Vahl.) Willd., / *Talinum portulacifolium* (Forsk.) Asch. Ex Schw. – an erect shrub with subterranean tuber belongs to the family Portulacaceae. The leaves of *Talinum cuneifolium* commonly known as Ceylone bachalli, are eaten as a cooked vegetable or as raw in salad, alone or with young stem parts. It is cultivated in Africa (like spinach), and is used as a green leafy vegetable due to its rich vitamin A and mineral content (Anonymous, 2004). The leaves can also be stored dry for later use. The plant is a palatable fodder for cattle and goats. It is also an important medicinal plant in the local systems of medicine. Indian system of medicine (ISM) refers that the leaves and roots are medicinally important parts. The supplementation of the leaves of this plant is reported to be a better diet for strengthening the body. 5 to 10 leaves are eaten daily in the morning to control blood sugar level in the diabetic patients (Savithramma, 2003). The powdered leaves are used in treatment of

diabetic, mouth ulcer and aphrodisiac. Roots are used for cough, gastritis, diarrhoea and pulmonary tuberculosis (Madhavachetty *et al.*, 2008). In Ethiopia the leaves are applied medicinally against eye diseases and the root against cough and gonorrhoea (Saradvathi, 2009).

This valuable plant has markedly depleted to satisfy the local food and medicinal needs. The growth of plant is very slow and takes long time. One of the constraints associated with the conventional propagation was very short span of seed viability and low survival rate by stem cuttings in *Talinum cuneifolium* which restricts its mass propagation via conventional methods. No alternative mode of multiplication was available to propagate and to conserve genetic stock of this plant. *In vitro* multiple shoot regeneration may give higher rate of propagation within very short time and space.

Isoenzymes can be considered to be the direct expression of the gene function of cells

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