

Research Paper :

Cytokinin induced multiple shoot induction from node explants of *Cucumis melo* var. *utilissimus* – A potentially important medicinal plant

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SUMMARY

In vitro shoot and multiple shoot induction was achieved in one of the important medicinal plants of cucurbitaceae family, *Cucumis melo* var. *utilissimus*, which has historically been used to treat a wide assortment of diseases. MS medium supplemented with 1.0 mg/l BAP was found to be optimum to induce shoots (100%) directly from the node explants. Significant increase in the number of shoots per explant was found in MS medium supplemented with 1.0 mg/l BAP and 15 mg/l Adenine sulphate. All the tested combinations have little effect on increasing the number of shoots. The present study established reliable and reproducible protocol for rapid multiple shoot induction from node explants of *Cucumis melo* using different concentrations and combinations of cytokinins.

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The primary aim of this study has been to gain some knowledge about the genotypic differences for callus initiation and high frequency plant regeneration from long term callus cultures of *Cucumis melo* var. *utilissimus*. This variety resembles cucumber and is used as a vegetable. The fruits are slender and elongated, the length varying from a few inches to about 3ft. They are pale or dark green in colour, smooth or ridged, with soft downy hairs covering the skin when tender. Seeds are smaller than those of the musk melon. This variety is cultivated both as a hot weather crop and as a rainy season crop. It grows on any kind of soil, but thrives best on well – manured rich loamy soils with abundant water supply. The seeds are small and edible and are used in confectionery. Several workers in past have micropropagated some of the important Asclepiadaceae members such as *Ceropegia bulbosa* (Patil, 1998; Britto *et al.*, 2003), *Hemidesmus indicus* (Misra *et al.*, 2003; Patnaik and Kishore, 1996) and *Holostemma ada-kodien* (Martin, 2002, 2003). Since very scarce information is available about micropropagation about this important medicinal plant, an attempt was made to develop a reproducible protocol for shoot and multiple shoot induction from nodal explants of one of the tissue culture recalcitrant medicinal plants of cucurbitaceae family, *Cucumis melo* var. *utilissimus*. using various concentrations

of benzyl amino purine and Adenine sulphate.

MATERIALS AND METHODS

MS (Muraspige and Skoog, 1962) medium supplemented with different concentrations of Benzyl amino purine (BAP) (0.1-1.2mg/l were used for shoot induction. For multiple shoot induction MS medium supplemented with 1.0 mg/l BAP and 5-20 mg/l Adenine sulphate were used. The pH of all media was adjusted to 5.75 before adding 0.8% agar and autoclaved at 1.1 kg/cm² and 121°C for 18 min. All the media were kept at 26±2°C for 3 days before use. The shoot segments after removing the leaves were cut into 2cm pieces, each containing a single node region and washed under running tap water for 15 min., followed by brief washing with sterile distilled water. Node explants (1.25 cm) were surface sterilized in 70% (v/v) ethanol for 60 sec., followed by 0.1% (w/v) mercuric chloride for 6 min., explants were thoroughly washed in sterile distilled water and blot dried on sterile Whatmann 1 mm filter paper. For shoot induction, nodal explants were again trimmed into 1.0 cm and transferred to MS medium supplemented with 0.1 – 1.0 mg/l BAP. Cultures were incubated at 26±2°C under a 16/8 h photoperiod for 26-28 days at a relative humidity of 65%. Node explants (1.0 cm long) were used as explants for multiple shoot induction on MS medium fortified with 1.0 mg/l Benzyl amino purine and 5-20 mg/l Adenine

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