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Callus induction in *Simarouba glauca* D.C.

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Simarouba glauca is an oil yielding tree with a very high productivity and its rapid multiplication is essential for mitigating the edible/ industrial oil demand. For developing *in vitro* regeneration protocol, optimization of surface sterilization of explant and study of effect of auxins and cytokinins is essential. The explant was exposed to mercuric chloride (0.1 %) and Sodium hypochloride (1 %) for a period of 2-12 minutes. Both the surface sterilizing agents gave near about same results with no contamination even at lowest contact time, however, as the contact time was increased intense browning was observed. The callus induction was observed at all the concentration of 2,4-D and BAP. More callusing was observed with higher concentration of both 2,4 D and BAP.

Key words : Simarouba glauca, Callus, Auxins, Cytokinins.

INTRODUCTION

Growth in population and the improvement in general living standards, the demand for edible/industrial oils has frequently exceeded that of supply. As a result, India even with its enormous wealth of natural resources and being a country with strong agricultural base is compelled to import millions of tones of edible oil in recent years. Since the further horizontal expansion in oilseed cultivation in arable land is feared to adversely affect the production of essential food crops, as a progressive step towards self sufficiency, there is need to plan for vertical improvement preferably by growing varieties of oilseed plants/trees with high productivity. The introduction of Simarouba plant with the oil productivity of 2000-2500 kg/ha/year (Krishnamurthy, 1998; Satpathi, 1984) and with the ability to establish well even in the marginal/ wastelands with degraded soils has given new hope for alleviating the shortage of edible oil/fat (Munde, 2001).

Simarouba glauca DC is an exotic specy belonging to the family Simarubaceae. It was introduced in India long back in 1966 at NBPGR, Amravati (Joshi and Hiremath, 2000) and in 1970 at Dr Panjabrao Deshmukh Krishi Vidyapeeth, Akola as a fast growing soil binding tree species. The plant is valuable for its multiple uses like edible oil, industrial oil, furniture industry and medicinal properties (Engler and Prantl, 1872, Polito and Negrito, 1981). Mass multiplication techniques for this species are not yet standardized, as evident from the available literature. However, attempts have been made for its *in-vitro* shoot multiplication (Rout and Das 1994, Rout *et al.* 1999). A standard protocol is not available for rapid multiplication of these plants. The experiments were designed to study various initial aspects required to standardize the *in vitro* regeneration, such as standardization of surface sterilization and callus induction using nodal explants.

MATERIALS AND METHODS

The present study was carried out in 2007 at Biotechnology Centre, Department of Agricultural Botany, Post Graduate Institute, Dr. Panjabrao Deshmukh Krishi Vidyapeeth, Akola. The nodal explants of Simarouba were collected from the College of Forestry, Dr.P.D.K.V., Akola. For incubation all the cultures were kept in culture room at temperature of 25 ± 2^0C with relative humidity at 55 ± 5 per cent and in dark condition.

Standardization of sterilization of explant :

For successful *in vitro* regeneration, an effective yet safe sterilization protocol for explant is essential. The explant were exposed to different surface sterilizing agents like mercuric chloride (0.1 %) and sodium hypochloride (1 %) for different contact time from 2 to 12 minutes. MS media was used as basic media for explant establishment. The observations were recorded after 10 days of inoculation. Nodal explants were washed thoroughly in running tap water for 1 hour to remove all adhering dirt and phenols. The explants were then treated with dettol (5ml/l) for 1 minute followed by washing with water. The surface sterilization of explant was carried out by keeping

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