INVITRO CLONAL PROPAGATION & PLANT REGENERATION OF LAWSONIA INERMIS

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ABSTRACT

Lawsonia inermis is a woody shrub, which is well known and used since ancient times in India. Lawsonia inermis is belongs to the family of Lathyraceae and is commonly called as Henna or Mehandi. Attempts were made to develop micropropagation method for cloning of henna plant. The explants of 3-4cm. in length with 2-3 nodes were initially washed with tap water. These were surface sterilized with 0.1% HgCl₂. Surface sterilized explants were inoculated on MS medium. The nodal explants show bud breaking on MS + BAP (3.33µM) medium. After optimizing the condition for the culture initiation from explant the in vitro produced shoots with part of mother plant were subcultured on fresh medium supplemented with different cytokinin BAP, Kin. (4.44+2.32 µM) medium. The repeated subculturing was performed at regular intervals of 3-4 weeks. In vitro regenerated shoots were excised individually and cultured on MS medium with one fourth, half strength of MS salts supplemented with IBA. The roots were developed within 10 days.

KEY WORDS: Lawsonia Inermis, BAP - Benzyl Amino Purine, MS - Murashige and Skoog, IBA - Indole 3-Butyric Acid.

INTRODUCTION

Lawsonia inermis belongs to the family Lathyraceae and is commonly called as Henna or Mehandi. It is heavily scented evergreen shrub growing to 6m (20ft.) with narrow pointed leaves, clusters of small white or pink flowers and blue-black berries. Henna native to Northern Africa, Asia and Australia, it is naturalized and cultivated in the tropic of America, Egypt, India and parts of the Middle East. L. inermis has too many possible beneficial herbal uses to fully enumerate. A few of its uses include: as an antidiarrheal, as an antidysentenic and as an astringent. The powder leaves form henna, used in the East to stain the finger nails to a red colour, for relatively permanent dyeing with henna. Contact dermatitis of the palms and soles from henna applied for cosmetic purpose. The leaves are applied; topically to control perspiration lawsone has been used as topical sunscreen (Johnson et al., 1973). Henna extract show antibacterial, antifungal and U.V. light screening activity. The paste is applied in the form of a plaster to treat fungal infection. The paste prepared from fresh leaves is applied...
on the pimplles, boils and eyes to cure conjunctivitis. The decoction of the plant is used orally in vomiting and cough. The warmed leaves applied on swelling by Bhils and Garasia tribals.

**MATERIALS AND METHODS**

Auxiliary buds of the field grown plants were surface sterilized with 0.1% HgCl₂ for 3 minutes. These were then washed with autoclaved distilled water and inoculated aseptically on culture medium. The cultures were incubated at 28°C in the growth chamber.

After optimizing the conditions for the culture initiation from explants the *invitro* produced shoots with part of mother explants were subculture on MS medium supplemented with different cytokinin namely BAP, Kinetin with additives. Invitro regenerated shoots were excised and individually cultured on MS medium with one-fourth strength of MS salts supplemented with different concentration of IBA. The cultures were incubated in the dark at 28-30°C for 5-10 days and later on transferred under suitable light condition.

**RESULTS AND DISCUSSIONS**

For the shoot induction from nodal explants various concentration of cytokinin were used and result were shown in fig1. The lower conc. of BAP (1.11 and 2.22 μM) is less supportive for bud breaking. Out of various conc. of BAP tested only 3.33μM of BAP was found to be suitable for culture initiation. Kinetin is not found to be optimum for culture initiation.

![Fig1. Effect Of Cytokinin Concentration on Multiple Shoot Induction](image)
Fig2. Effect of IBA on *in Vitro* Root Induction

The maximum shoot number recorded on MS medium supplemented with BAP + Kin. (4.44 + 2.32 µM). The various conc. of BAP also affect the shoot number and shoot elongation on (1.11 and 8.88 µM) of BAP, the shoot number and shoot length is less. On 2.22µM of BAP the shoot number and shoot length is optimum, shown in fig 3 &4. For the *invitro* regenerated shoots were rooted *invitro* on ½ strength of MS medium supplemented with 9.85 µM of IBA.
Fig3. Concluded Whole Micropropagation Cycle of *Lawsonia Inermis*
Fig 4. Effect of IBA Concentration on In Vitro Root Number & Length

The rooting was observed after 10-12 days of inoculation. It was also observed that the glassware also affect the rate of multiplication, maximum number of multiplication was observed in culture bottles as compare to conical flask.

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REFERENCES


