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EFFECT OF AUXIN ON VEGETATIVE GROWTH OF STEM CUTTING OF SOLANUM XANTHOCARPUM SCHRAD&WENDL

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ABSTRACT

Solanum xanthocarpum belonging to the family Solanaceae is very diffusely branched and creeping and perennial herb. The presence of thorns on stem it's also called Kantakari. The all parts of the plants are medicinally important. The cuttings of *Solanum xanthocarpun* treated with IAA and IBA in different concentrations (10, 50 and 100ppm) and their effect on plant growth have studied. IBA treated cutting showed better response on plant growth as height/length, number of leaves, size of leaves, number of nodes and internodes, number of branches, number and length of root as compared to IAA treated cuttings and control.

Key Words: Solanum Xanthocarpum, IAA (Indole Acetic Acid) IBA (Indole Butyric Acid).

Introduction

Solaum xantocarum commonly known as Bhata Kateri is most important medicinal plant. It is a very diffuse, bright green perennial herb, woody at the base. Stem somewhat zigzag, sparsely or densely clothed with stellate tomentum when young. At length glabrous. The leaves are ovate or elliptic in outline, sinute or sub pinnatifid obtuse or subacute, stellate hairy on both surface (specially beneath), rarely becoming glabrous with age, both surfaces armed with long. yellow, sharp prickles on the midrib and nerves, the latter raised on the lower surface, the base usually unequal sided, petiole 3-7 cm long, prickly and stellately hairy, decurrent at the base into 2 ridges running down to the next lower node. The flowers are in 2-6 flowered cymose inflorescence. Flowering and fruiting is March-June.

Material & Method

Plant materials were collected from the University campus. Leaves and soft shoot were excised and the shoots were cut into 20 cm long cuttings having a diameter of about 1 cm. The cuttings were dipped in 0.1% water suspension of Bavistin for 15 minutes. These were then treated with 10, 50 and 100 ppm solution of Indole acetic acid (IAA). Indole butyric acid (IBA) for 24 hr. by basal dip method. Control cuttings were treated similarly with distilled water only. Immediately after the treatment, the cuttings were planted in earthen, pots filled with a mixture of soil and sand in 2:1 ratio and were kept under natural environmental conditions. Rooting data was collected after 6 weeks.

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Result

Hormone Treatment:

The cuttings of *S.* xanthocarpum treated with IAA and IBA in different concentrations (10, 50 and 100ppm) and their effect on plant growth, were studied. The results of these studies were as follows:

IBA treated cutting showed better response on plant growth as height/length, number of leaves, size of leaves, number of nodes and internodes, number of branches, number and length of root as compared to IAA treated cuttings and control. IBA 50ppm treated cuttings showed maximum plant height 36.57± 2.72 cm, but number of leaves 15.44±15.23, size of leaves (length & width) 8.315±0.812 cm & 5.11±0.592cm, number of nodes and internodes 7.28±1.29 & 6.28±1.29, number of branch 5.52±0.585, number of flower 6.52±0.733 and number of fruit 5.08±1.05 and number of root 26.4±0.92 and length of root 14.16±0.756 cm was found with IBA 100ppm treated cuttings followed by value with IAA 50ppm treated cutting with plant height 33.29±3.41cm, number of leaves 9.44±1.802, size of leaves (length & width) 6.38 ±0.635 cm & 4.126± 0.142 cm, number of nodes and internodes 7.28±1.028 & 6.28±1.028 and number of branch 5.4±0.802, number of flower 3.52±1.14, number of fruit 3.84±1.22, number of root 14.6±1.02 and length of root 8.24±0.696 cm. Minimum plant height was 30.48±1.89 cm, number of leaves 7.72±1.18, size of leaves (length & width) 4.84±1.04 cm & 3.12±0.365 cm number of nodes and internodes 5.96±1.29 & 4.96±1.29 found with IBA 10ppm treated cutting but minimum number of branch 3.68±0.739, number of flower 3.12±0.088, number of fruit 3.24±1.2, number of root 4.6±0.509 and length of root 3.82+0.299 cm was found with IAA 10ppm treated cuttings as compared to plant height 29.28±2.77cm, number of leaves 6..4±0.919, size of leaves 5.38±0.635 & 3.03+0.640 cm, number of nodes and internodes 5.02±1.08 & 4.02 1.08, number of branch 3.92+0.66, number of flower 3.08±0.98, number of fruit 1.05±0.68, but number of root 5.84±0.583 and length of root 4.54+±0.611 cm found in control.

Discussion

In case of Solanum xanthocarpum 100 ppm IBA gave better response than any other concentrations of IBA and IAA. Gupta et al (1989) found that 50ppm IBA gave best response in Melia azadarach for inducing root Badola et al (1991) found that the IBA treatment was best in *Solanum hispidum* for maximum number of roots, root length, rooting percentage and shoot length also. Promotions of adventitious root formation on stem cutting of many plant species, treated with IBA and another auxin is well known (Nanda, 1970, 1971, Hartmann & Kestar 1983, Nanda & Kochhar 1988, Pal1988). However, IBA treatment not only increased the number of roots produced per cuttings, it also promoted root growth, increased sprouting of axillary buds and stimulated shoot growth on branch cutting of Solanum hispidum but NAA and IAA 300ppm has been found more effective concentration for early rooting, root length and survival percentage in Rosemarry (Chauhan et al., 1992) in Ficus glomerata Bhat & Badoni, 1993) in Robinia pseudocacia Linn (Swamy et al., 1994). Grewia optiva (Husen et al., 2003.

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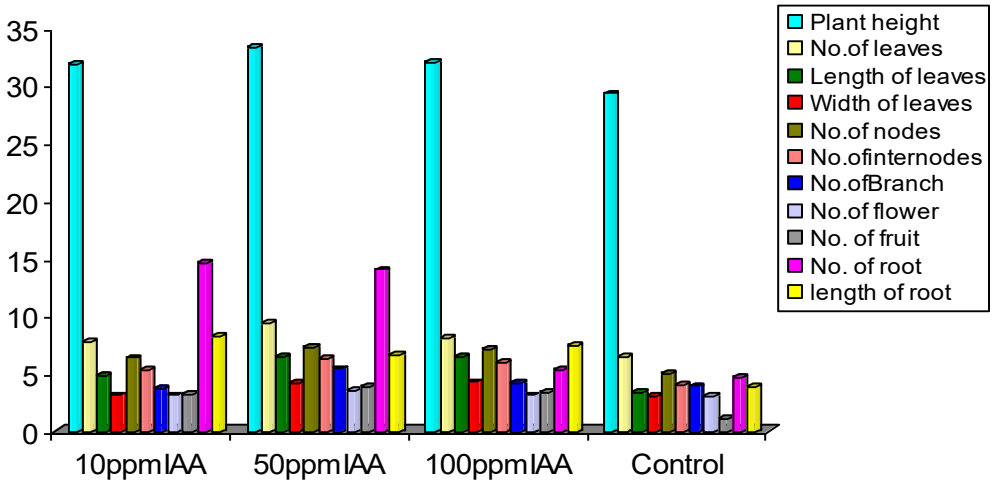
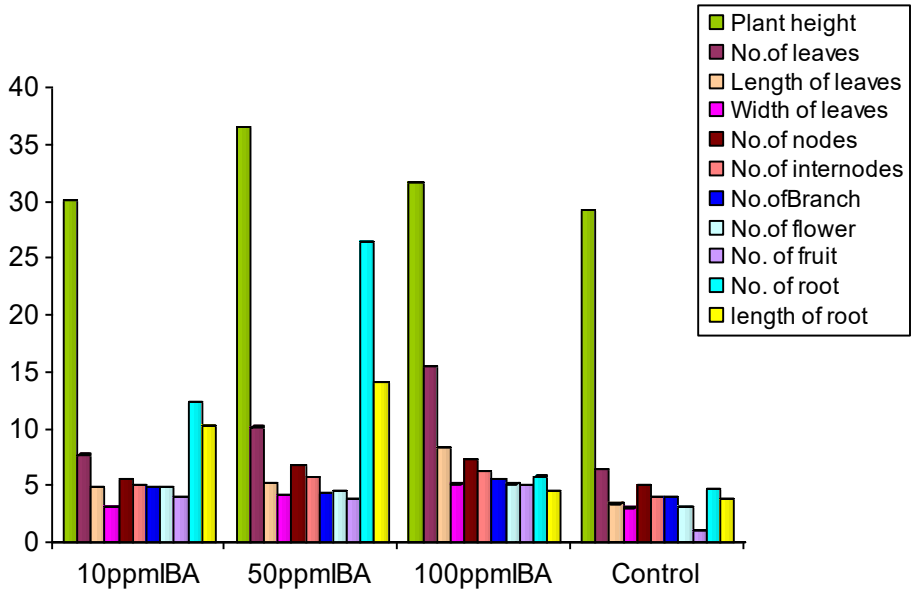
Conclusion

IBA treated cutting showed better response on plant growth as height/length, number of leaves, size of leaves, number of nodes and internodes, number of branches, number and length of root as compared to IAA treated cuttings and control.



Hormone Concentrations

Vegetative growth in cuttings of *S.* xanthocarpum treated with 10, 50 and 100ppm IAA.



Hormone Concentrations

Vegetative growth in cuttings of *S.* xanthocarpum treated with 10, 50 and 100ppm IBA.

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Reference

1. Babitha, M., P.S. Rao. Elusing, Meru & Sreenivasulu (2002). Effect of auxin on rooting stem Cutting of Givotia rotteriformis Griff. Via hydropit, Indian Forester., 129(1): 266-270.
2. Badola, K.C., M.Pal & H.C.S. Bhandari (1993). Effect of auxin on rooting branch cutting, Growth and flowering of Bhanjira (Pelrilla frutescens Linn.), Indian Forester., 119(7): 658-571.
3. Badola, K.C., Mohinder Pal & H.S.C. Bhandari (1991). Rooting branch cutting of Solanum hispidum for raising clonal crops, Indian Journal of Forestry., 14(4): 290-291.
4. Bhardwaj, S.D., A.K Chakraborty & N.K. joshi, (1993). Vegetative propagation of Ranbaigan (Solanum torvum Sw) by rooting branch cuttings, Indian Forester., 119(2): 1027-1028.
5. Gera, Mohit. Gusain. Singh. Mahender. M.Y. Ansari & N.S Bishat (2005). Economics of Cultivation of some commercially important medicinal plants, Indian Forester., 131(3): 358-364.
6. CP Khare, Encyclopedia of Indian Medicinal Plants, Published by Springer, 1995, 432-433.
7. Gupta, R. S. & A. Kumar (2003). Studies on the effect of growth regulators on growth and physiology of Trigonella foneum-grecum Linn: (Methi). National Sympozium on Emerging Trands in Indian Medicinal Plants. Lucknow, 223(3-014).
8. Haissig, B.E. (1972). Meristamatic activity during adventitious root promordium development: Influence of endogenus auxin and applied gibberellic acid, Plant Physiology, 49:29-33.
9. Haissig, B.E. (1979). Influence of aryl esers of indole 3- acetic acid and indole 3-butyric acids on adventitious root promordium initiation and development, Physiologia Plantarum., 4: 440-447.
10. Husen, Azamal. Khali, Rakesh & Bhandari, H.S.C. (2003). Effect of phytohormone on rooting of nodal shoot cutting of Grewia optiva Drumnod, Indian Forester., 129(2): 289-294.
11. Jadhav, S.G., B.B. Jadnav & B.B. Apte (2003). Effect of different growth regulators on vegetative propagation of Patchouli (Pogostemon cablin Benth), Fafai Journal., 4(3): 25-27.
12. Jagadeesam, M. & S.S. Devi (2002). Antiasthmatic activity of fruits of Solanum surattense Burf. And its adulterant National Sympozium on Emerging Trends in Indian Medicinal Plants, Lucknow., Pp79.
13. Joshi, N.K., S. Sharma., G.S. Shamet & R.C. Himan (1992). Studies on the effect of auxin and season on rooting stem cutting of some important shrubs in nursery beds. Indian Forester. 118(12): 893-900.
14. Joy, P.P., K.E. Savithri., S. Mathew & B.P. Skaria (2004). Effect of shade and spacing on growth, yield and quality of Black Musli (Curculigo orchioides). Journal of Medicinal and Aromatic Plant Sciences. 26(4): 707-716.