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Effects of PGRS on Rooting of *Gymnema* Cuttings (*Gymnema sylvestris*)

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Gymnema sylvestre R. Br. is popularly known as Gudmar or Madhunashini of Asclepiadaceae family and is widely distributed in the tropical forests of central, western and southern India and in the tropical areas of Africa, Australia and China. Its habit is perennial, woody climber and generally requires support for growth. It is a slow growing herb, found in tropical and subtropical humid climate. Propagation through seed germination is difficult due to low viability of the seeds. Leaves are opposite, usually elliptic or ovate, inflorescence is lateral umbel in cymes. The important active ingredient of *Gymnema sylvestre* is an organic acid called “Gymnemic acid”. The leaves of this plant are used for inhibiting the taste of sweetness and are used in the control of diabetes, as a stomachic, diuretic and cough suppressant activity. The leaf extract is also used for the treatment of various physiological effects such as rheumatism, ulcer, jaundice, dyspepsia, constipation, eyes pain, dental caries. It also possesses antimicrobial, antiviral, hepatoprotective, anti-allergic, anti-inflammatory and free radical scavenging activities.

The experiment was conducted at Department of Horticulture, Faculty of Agriculture. The experiment was laid out in completely randomized block design with nine treatments viz., (T₀: Control, T₁: IBA @ 250 ppm, T₂: IBA @ 500 ppm, T₃: IBA @ 750 ppm, T₄: IBA @ 1000 ppm, T₅: NAA @ 250 ppm, T₆: NAA @ 500 ppm, T₇: NAA @ 750 ppm, T₈: NAA @ 1000 ppm, T₉: Control (Untreated). Which were replicated at thrice times. The cuttings are uniform size length is 15 cm. Cuttings was quick dipped the prepared PGRs solution transplanted in the polythene bags filled with rooting medium. The rooting medium is (red soil + compost + sand) (1:1:1). Parameters studied were rooting percentage, days required for initiation rooting, root length, number of shoot per cuttings, length of shoot, number of leaves/cutting. After two and half months from transplanting the cuttings into polythene tubes, data was collected for different root and shoot parameters and statistically analyzed to draw meaning

inferences.

Effect of PGR'S on rooting (%), days taken for rooting, root length

Data related to rooting and sprouting behaviour of *Gymnema* cuttings under the influence of different concentrations of PGRs is presented in (Table 1). Maximum number of days taken for initiation of root was observed in control (56.23 days) and minimum (37.07days) however all PGRs treatments were significantly. Maximum rooting percentage (72.78%) and root length (24.56) was observed in (T₄: IBA @ 1000 ppm Quick dip) and minimum rooting percentage (31.02) and root length (13.04). Treating *Rauvolfia* cuttings treated with IBA @ 2000 ppm significantly increased rooting and sprouting percentage [1]. Better rooting (92%) in *Stevia* cuttings treated with IBA @ 500 ppm recorded the better rooting percentage [2]. The rooting in woody cuttings is chiefly influenced by the concentration of carbohydrate. Generally, carbohydrates supply energy and carbon skeleton for the synthesis of organic compounds which are used for root formation. High sugar level affects rooting by reducing the level of nitrogen which is essential for rooting process [3]. Carbohydrate helps in auxin transport as well as growth of shoots and roots. Higher percentage of rooting in cuttings treated with IBA may be ascribed to the higher partitioning of photosynthates towards root development. The reason may be attributed to enhanced tissue sensitivity and increased rooting via increased internal free IBA resulting in increased number of roots [4] also same results were observed by [5] in *Rosa damascene* and [6] in *Jasminum sambac*.

Effect of PGR'S on no. of shoots/ per cutting, shoot length, and no. of leaves / cuttings

All the treatments are significant than the control. Data are pertaining presented in (Table 1). Effect of plant growth regulators on maximum number of shoots per cutting (4.82), shoot length (57.67) and number leave per cuttings (24.63) were recorded (T₄: IBA @ 1000 ppm Quick dip). The minimum number of shoots per cutting (1.78), shoot length (23.03cm) and number leave per cuttings (11.27) were recorded in (T₉: Control). Indian sarasaparilla cuttings treated with IBA @ 1500 ppm recorded the highest shoot length (43.5

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cm), highest number of shoots (48) [7]. *Bougainvillea peruviana* cv. Shubra, the treated the cuttings with IBA @ 500 ppm recorded highest number of leaves per cutting (41.4), number of shoots per cutting (1.37) [8]. Earliness in sprouting, increase in number of shoots and shoot length may be due to utilization of stored carbohydrates present in cuttings, nitrogen

and other factors with the aid of growth regulators [9]. Early sprouting and higher shoot parameters in initial stages might have brought early and better rooting. Further stored food materials with the aid of growth regulators have hastened the sprouting thereby enhancing the utilization of carbohydrates, at the base of cuttings through photosynthesis [10].

Table 1 Effect of plant growth regulators on rooting of *Gymnema sylvestris* R. Br)

Treatment details	Rooting (%)	Days taken for rooting	No. of shoots /cutting	Shoot length	No. of leaves /cutting	Root length
T ₁ : IBA @ 250 ppm Quick dip	46.68	50.92	2.92	36.02	16.28	17.36
T ₂ : IBA @ 500 ppm Quick dip	67.56	39.84	4.44	53.34	22.63	23.12
T ₃ : IBA @ 750 ppm Quick dip	51.9	48.15	3.30	40.35	17.95	18.8
T ₄ : IBA @ 1000 ppm Quick dip	72.78	37.07	4.82	57.67	24.63	24.56
T ₅ : NAA @ 250 ppm Quick dip	36.24	56.46	2.16	27.36	12.94	14.48
T ₆ : IBA @ 500 ppm Quick dip	57.12	45.38	3.68	44.68	19.62	20.24
T ₇ : IBA @ 750 ppm Quick dip	41.46	53.69	2.54	31.69	14.61	15.92
T ₈ : IBA @ 1000 ppm Quick dip	62.56	42.61	4.06	49.01	21.29	21.68
T ₉ : Control	31.02	56.23	1.78	23.03	11.27	13.04
CD (p=0.05%)	4.12	2.47	0.28	3.33	1.47	1.14
SEd	2.06	1.23	0.14	1.66	0.23	0.57

SUMMARY

The present investigation was conducted at Department of Horticulture, Faculty of Agriculture, Annamalai University, Annamalai Nagar. The experiment was laid out in completely randomized block design comprising two types of growth

regulators like IBA and NAA concentrations (250, 500, 750 and 1000 ppm). The results revealed that gymnema cuttings treated with IBA @ 500 ppm recorded maximum rooting percentage (67.56%) and minimum days taken for rooting (39.84 days), maximum no. of shoots/ cutting (4.82), shoot length (53.34cm), No. of leaves/ cutting (24.63).

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