

IN VITRO MICROPROPAGATION OF GLADIOLUS (*Gladiolus anatolicus*)

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Extended Summary

Gladiolus being a potential ornamental cut flower is cultivated throughout the world for its attractive spikes. The present study was intended to establish a protocol for *in vitro* plant regeneration of two gladiolus varieties. This research was conducted in tissue culture laboratory of Genetics and Plant Breeding Department, Sher-e-Bangla Nagar, Dhaka. Cormels of each variety as explants and media supplemented with various growth regulators (BA, NAA, IBA and IAA) of different concentrations were explored *In vitro* propagation techniques. The effect of different combination concentration of plant growth regulators on *in vitro* callus induction and plant regeneration was studied. The maximum days (7.5 days) to callus induction was noticed in the treatment combination 1 mg/l IBA + 1.5 mg/l BA in variety of yellow. The minimum days (4.0 days) to callus induction were in variety white with 1.5 mg/l IBA + 1.5 mg/l BA. The highest size (2.80 cm) of callus was found in the variety white was observed at 1.5 mg/l IBA + 1.5 mg/l BA. The minimum size of callus (1.52 cm) was found in the variety yellow at 1mg/l IBA + 1mg/l BA. The highest weight of callus (3.11 g) was found in the variety of white with the treatment combination 1.0 mg/l IBA + 1.0mg/l BA and the lowest weight (2.08 g) of callus was found in the treatment combination 1.0 mg/l IBA + 1.5 mg/l BA in yellow variety. The maximum days (19.50 days) to shoot initiation was found in variety yellow with 0.3 mg/l NAA + 3.0 mg/l BA and the minimum days (6.61 days) to initiation in white variety was found at 0.3 mg/l NAA + 2.0 mg/l BA. The maximum no. of shoots was found in variety white (18.00) with 2.0 mg/l BA and the minimum no. (1.34) of roots was found in variety yellow at 0.5 mg/l NAA + 1.0 mg/l BA. The response of varieties showed that white variety produced longer shoot (8.11 cm) at 2 mg/l BA compared to yellow variety (1.35 cm) at 0.5 mg/l NAA + 3.0 mg/l BA at 42 DAI. The maximum days (18.6 days) to root initiation was found in yellow variety was found with 1.0 mg/l NAA and the minimum days (6.12 days) to root initiation in white variety at 1.5 mg/l IBA. The maximum no. of roots (8.33) was found in white variety with 1.5 mg/l NAA and the minimum no. (1.13) of roots was found in yellow variety at 2 mg/l NAA. The response of varieties showed that white variety produced longer root (6.15 cm) at 1.5 mg/l NAA compared to yellow variety (4.50 cm) with 1.5 mg/l IBA) at 42 DAI.

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From the above study, it can be concluded that among the plant growth regulators, combination of 1.5 mg/l IBA + 1.5 mg /l BA performed better for callus induction, 2.0 mg/l BA showed excellent performance for regeneration into shoots from the callus and 1.5 mg/l NAA was found most responsive for root induction from callus derived shoots. Among the varieties, white variety performed better than yellow variety for regeneration. Thus, the protocol developed in this study is useful for providing disease-free propagules for commercial cultivation, conservation, and international germplasm exchange while adequate planting material is a concern of this plant in the country.