DEVELOPMENT OF IMPROVED VEGETATIVE PROPAGATION TECHNIQUES FOR SELECTED TROPICAL CUT FLOWERS AND FLOWERING POT PLANTS

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Keywords: in-vitro propagation, asexual propagation, Indole butyric acid, tropical cut flowers, rooting hormones.

Introduction

Many commercially important ornamental plants are propagated vegetatively. The discovery of root inducing chemicals and the development of mist propagation and micropropagation techniques have greatly enhanced propagation procedures. Different species, however, differ in their responses to the various propagation techniques. Successful propagation requires a knowledge of the physiology of the plants and environmental and chemical manipulations. The overall objective of the study was to develop suitable techniques for cost-efficient mass propagation of planting materials for selected ornamental species with good commercial potential. One of the studies conducted was the development of protocols for micropropagation of *Polianthes tuberosa.*

Materials and Methods

Different concentration of NAA in combination with either BAP or Kinetin were used to initiate callus and adventitious shoot formation from rhizomes and bulb segments of *Polianthes tuberosa* cultured in MS medium. The effect of different levels of 2,4D on callus initiation was also investigated. IBA and NAA at 0.0, 0.5, 1.0, 5.0 and 10.0 mg/L in MS medium were used to induce in-vitro rooting of the adventitious shoots obtained from the first experiment. An experiment was also conducted to evaluate the effects of subculture on shoot proliferation of *P. tuberosa.*

Results and Discussion

The highest percentage of callus formation from explants of *P. tuberosa* occurred at 1.0 mg/L NAA. Initiation of callus decreased with increasing concentration of NAA. NAA was also found to successfully induce callus initiation in several other plant species (Skirvin and Janick, 1976; Yamada, 1977; and Zaerr and Mapes, 1982). Treatment with low levels of 2,4-D (0.25 - 1.0 mg/L) also induced callus formation. The percentage of explants producing adventitious shoots was very high (90%) regardless of whether NAA, BAP or Kinetin was used or not. However, the number of shoots formed per explant was highest when 0.1 mg/L NAA was used in combination with either 1.0 mg/L BAP or 0.5 mg/L Kinetin. Preliminary studies on in-vitro rooting of the adventitious shoots showed that IBA influenced rooting percentage as well as quality of the roots produced. NAA, however, had no effects on in-vitro rooting of *P. tuberosa* at all the concentration levels tested.

Conclusions

Both callus and adventitious shoot formation can be obtained from bulb segments of *P. tuberosa* cultured in MS media supplemented with the growth regulators NAA, BAP or Kinetin in the appropriate concentration, while in-vitro rooting of the shoots can be induced using IBA.

References

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Supported by IRPA Grant 01-02-04-0017