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Short communication

Callus induction and subsequent plant regeneration from leaf explants of *Gerbera jamesonii*

V. A. Parthasarathy, U. Parthasarathy, V. Nagaraju and M. Mishra

Biotechnology Laboratory
ICAR Research Complex for NEH Region
Barapani — 793 103, Meghalaya, India

Key words: *in vitro*, Gerbera, callus, adventitious shoots.

ABSTRACT

Studies were conducted to induce callus and plant regeneration from leaf explants of *Gerbera jamesonii*. The leaf explants formed hypothetically embryogenic callus when cultured in MS medium supplemented with NAA (1 mg/l), BAP (0,75 mg/l), and IBA (0,75 mg/l). Subsequently, adventitious shoots were developed from callus tissue.

INTRODUCTION

Gerbera is one of the leading cutflower crops and its improvement is of increasingly great importance. Biotechnological methods are available for improvement of different traits. While standardized protocols are available for micropropagation (Murashige et al., 1974; Pierik et al., 1975; Parthesarathy and

Nagaraju, 1995) studies on induction of hypothetically embryogenic callus from different explants have scarcely been reported. Indirect adventitious shoot formation (via callus) from leaf explants of Gerbera was observed by Jerzy and Lubomsky (1991).

MATERIAL AND METHODS

Fully expanded leaves (third to fifth leaf) from *in vitro* grown seedlings of Gerbera (*Gerbera jamesonii Bolus*), line RCG 1, were used in the study, three being used for each treatment. The leaves were cut into strips and cultured on Murashige and Skoog (1962) medium supplemented with α-naphthalene acetic acid (NAA), 6-benzyl amino purine (BAP), kinetin (Kin), and indole-3-butyric acid (IBA) in different combinations. The culture conditions and media preparation were reported earlier (Parthasarathy and Nagaraju, 1995).

RESULTS AND DISCUSSION

Out of the various combinations tried, success was obtained in varying degrees with five combinations (Table 1). Differentiation into plantles was observed only

Table 1

Morphogenetic response of leaf explant of Gerbera to auxin and cytokinin

Treatment (mg/l)	Total culture weight (mg)	Culture of mother tissue (mg)	Weight of callus (mg)	No. of roots and length (cm)	No. of shoots and length (cm)	No. of leaves
BAP (1.0)+ Kin (1.0)+ NAA (1.0)	1.209	0.300	0.873	—	—	—
NAA (1.0)+ IBA (1.0)	0.412	0.0863	0.188	7.6 (1.1 2.3)	—	—
NAA (1.0)+ BAP (0.75)+ IBA (O.75)	0.507	0.100	0.329	5 (0.5 0.7)	4.0 (0.6 1.5)	3.6
NAA (1.0)+ BAP (1.0)+ IBA (1.0)	1.798	0.78	1.521	—	—	—
BAP (1.0)+ NAA (1.0)	0.741	0.373	0.554	—	—	—

in the case of NAA (1 mg/l+BAP (0.85 mg/l)+IBA (O.75 mg/l). However, when the concentrations of BAP and IBA were increased to 1 mg/l the growth of callus was good with no organogenesis. Removal of BAP from the combination induced only root formation. Interestingly, BAP and NAA did not induce plantlet formation in the absence of IBA. Indole compounds such as IAA have earlier been reported to be successful in induction of callus in Gerbera (Tosca et al., 1990). It was even found that of different genotypes tested only 6 genotypes out of 21 genotypes produced callus and plantlets which the mentioned authors attributed to the genetic nature of the materials. The generated shoots were transferred to MS medium for shoot and root development and later transferred to soilrite (vermiculite with soil) in mist house.

CONCLUSION

Leaf explants of Gerbera produce hypotetically embryogenic callus and adventitious shoots when cultured in MS medium supplemented with NAA (1 mg/l), BAP (0.75 mg/l), and IBA (0.75 mg/l).

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WYTWARZANIE KALUSA I REGENERACJA ROŚLIN Z EKSPLANTATÓW LIŚCIOWYCH GERBERY (*Gerbera jamesonii*)

Streszczenie: Przeprowadzono badania nad wytwarzaniem kalusa i regeneracją roślin z eksplantatów liściowych gerbery. Przypuszcza się, że te eksplantaty kultywowane na pożywce MS z dodatkiem NAA (1 mg/l), BAP (0,75 mg/l) i IBA (0,75 mg/l) tworzyły embriogenny kalus. Następnie z tkanki kalusowej rozwijały się pędy przybyszowe.

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