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Effective Protocol for In Vitro Callus Induction from Different Explants of *Rosa centifolia*

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Abstract

Genus *Rosa* belongs to the family Rosaceae and has a high floricultural demand all over the world. It is most often used for decorations, aromatic purposes, and medicinal value. Roses can be propagated by seeds, cuttings, layering, and grafting. Seed propagation often is not genetically identical, while other methods of rose propagation are slow and time-consuming. The objective of the present study was to develop an effective protocol for in vitro callus induction of *Rosa centifolia*. Nodal and leaf explants from *R. centifolia* were surface sterilized and cultured separately in Murashige and Skoog (MS) medium supplemented with 30 g/L brown sugar, 8 g/L of agar, and different concentrations. 6-benzyl amino-purine (BAP) (0.50, 1.50, 2.00, 2.50, 3.00 mg/L) combined with Indole-3-butyric acid (IBA) (0.40, 0.30, 0.20, 0.10, 0.00 mg/L) for nodal explants and BAP (0.50, 1.50, 2.00, 2.50, 3.00 mg/L) combined with Naphthalene acetic acid (NAA) (0.40, 0.30, 0.20, 0.10, 0.00 mg/L) for leaves disc. Explants were used beside the control without Plant Growth Regulators (PGRs) by adjusting the pH to 5.7. There were five replicates in each treatment. After three months of incubation in the dark at 26° C, the highest percentage of nodal explants producing callus was 88.0%, and the mean weight of callus per nodal explant was 5.68 g in the MS medium supplemented with BAP (2.50 mg/L) and IBA (0.10 mg/L). While the highest percentage of leaf disc explants producing callus (72.3%,) and mean weight of callus per leaf explant (6.23 g,) were reported in the MS medium supplemented with BAP (2.00 mg/L) and NAA (0.20 mg/L). The findings suggest that MS medium supplemented with BAP (2.50 mg/L) and IBA (0.10 mg/L) for nodal explants and MS medium supplemented with BAP (2.00 mg/L) and NAA (0.20 mg/L) for leaf explants are suitable for effective regeneration of callus of rose (*Rosa centifolia*).

Keywords: BAP, IBA, In vitro callus induction, NAA, *Rosa centifolia*