Development a suitable protocol for micropropargation of *Gerbera jamesonii* variety Ruby Red

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Abstract

Gerbera is a popular and commercially important plant widely used as a decorative garden plant or as cut flowers Micropropagation enables rapid multiplication of a desired plant. The research was carried out at Royal Botanic gardens, Peradeniya. The main objective of the present study was to initiate a successful rapid multiplication protocol for the new variety using limited planting materials. In this regard, identification of a suitable media, explant source and BAP (6-benzylaminopurine) level in the medium for initiation of in-vitro cultures were among the specific objectives. In experiment 1, two different explant sources (Immature capitulums and Immature leaves) were established in two basal media MS (Murashige & Skoog) and B5 (Gamborog et al 1968), both supplemented with 2 mg/l BAP, 0.1 mg/l IAA (Indole-3-aceticacid) and 30 g/l sucrose. Capitulum explants of the variety Ruby Red were cultured in B5 medium with different levels of BAP (0, 1, 2, 4, 6, 8 and 10 mg/l) while IAA was held constant (0.1 mg/l) in experiment 2. Callus initiation and growth were observed and callus initiation was categorized according to growth.

The variety Ruby Red responded for callus initiation successfully, and callus of transferable size to multiplication media could be obtained in 4-6 weeks time. Callus initiation was significantly higher in B5 medium compared to MS medium, and also it was significantly higher with capitulum explants ($p \leq 0.01$) compared to immature leaf explants. There was no significant effect of BAP level in B5 medium for the initiation of callus but the callus growth was recorded significantly highest in B5 media ($p \leq 0.01$) supplemented with 2 mg/l and 6 mg/l BAP + 0.1 mg/l IAA. After transferring into the multiplication media, shoots started to emerge in 3 months time. On average 5-10 shoots could be obtained from a single piece of capitulum established. As a single capitulum was cut in to 20 pieces at establishment of cultures, after one cycle of proliferation 100-200 shoots could be obtained from a single capitulum. It is concluded that capitulum explants of the variety Ruby Red cultured on B5 medium supplemented with 2 mg/l and 6 mg/l BAP + 0.1 mg/l IAA and 30 g/l sucrose could be used to obtain callus successfully and produce a large number of shoots. This study suggests a novel protocol which is more efficient and effective for micropropagation of *Gerbera jamesonii* variety Ruby Red.

Keywords: Micropropagation, BAP, Callus Initiation, Capitulum, Gerbera