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Effect of growth regulators on *in vitro* regeneration of *Gerbera jamesonii*

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Gerbera jamesonii (Gerbera), belongs to the family Asteraceae, is considered as one of the important cut flowers in the global floriculture industry. The propagation process of Gerberas require improvements to fulfill the commercial demand and *in vitro* propagation was considered as a suitable solution to overcome this problem. The aim of the present study was to determine the effect of various concentrations of growth regulators on callus formation and shoot regeneration of Gerbera using leaves as explants.

Healthy mature leaves were taken from *Gerbera* grown in the plant house, University of Kelaniya for obtaining suitable explants. Excised explants were washed with teepol (0.1%) solution for 06 mins followed by washings pre-treated with 10% (w/v) captan and sterilized distilled water (SDW). The explants were surface sterilized with Clorox solution (5%) with addition of Tween 20, followed by washing with SDW. Sterilized leaves were cut into 5-10 mm pieces. Callus induction, shoot proliferation and root regeneration were accomplished on Murashige and Skoog (MS) basal medium supplemented with different concentrations (0, 0.5, 1.0, 1.5 and 2.0mg/L) of 6-benzylaminopurine (BAP) and (0, 0.5 and 2mg/L) of naphthaleneacetic acid (NAA). For rooting, MS medium was supplemented with different concentrations of BAP (0, and 2.0 mg/L) and NAA (0, 2.0 mg/L).

The highest callus initiation was observed in MS medium with 2 mg/L NAA and 1.0 mg/L BAP (60 days) while highest shoot initiation was obtained in MS medium with 2 mg/L BAP and 0.5mg/L NAA. Number of shoot formation per explant was 80% and shoots were visible after 26 days. When BAP was used as the sole growth regulator in the culture medium without NAA, limited shoot proliferations and translucent short shoots were observed (54%), whereas, NAA alone as the sole growth hormone did not initiate any shoot proliferation. With up to 2 mg/L NAA in the medium, BAP had a negative effect on shoot development, multiplication rate and the height of the shoots. MS medium supplemented with, 2 mg/L NAA, was identified as the best response for rooting initiation and number of roots per explant were 23.2±1.34. The first roots appeared after 1–2 weeks of culturing and a well developed root system was noted in 4–5 weeks. Subsequently, plants were removed from the medium and transferred to coir dust for acclimatization. The findings indicate that above three media compositions could be utilized for callus initiation, shoot proliferation and root formation from leaf explants of *Gerbera jamesonii*.

Keywords: Callus initiation, *Gerbera jamesonii*, Root initiation, Shoot formation