B-136 Mass propagation of Madonna lily *(Lilium candidum* L*)* through tissue culture

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Madonna lily is a flowering plant with large white flowers used widely for bridal bouquets and as a cut flower. One of the limiting factors for the cultivation of this plant is the long period of dormancy (6-8 months) in bulb scales. This study was carried out to find a suitable *in vitro* technique for mass propagation of Madonna lily. Therefore, 2 experiments were designed to produce plants through direct organogenesis and through indirect organogensis via callus using bulb scales. In experiment I to induce shoot formation through direct organogenesis, complete clove, bisected clove and cut pieces (1 x 1 cm size explants) were cultured on agar semi-solidified MS medium supplemented with cytokinin (BAP 0 - 2 mg/l and/or auxin (IBA 0 - 0.5 mg/l) and/or giberellic acid (GA_3 0-0.5 mg/l). The cultures were incubated at 26 ± 2°C under illumination of 1000 lux for 16 h day. The shoot formation was obtained at all levels of growth regulators. The medium with 1 mg/l BAP showed the highest number of normal shoot production from entire cloves. Bisected cloves showed varying degrees of shoot production. However a slower rate of growth and proliferation was observed in these cultures. In the case of cut pieces, only basal segments produced shoots. There was no shoot production from the most distal portion of the cloves. The middle segments produced 1 or 2 shoots after 10 - 14 weeks in culture.

In the second experiment, callus induction was carried out, by using the above explants on MS medium containing auxin (2,4-D 0 - 0.5 mg/l or NAA 0.5 mg/l) incubated in the dark. Bisected and cut pieces produced mass of callus in the medium with 0.1 mg/l or 0.2 mg/l 2,4-D. Subculturing the callus on medium produced with no hormones or with 0.025 to 0.1 mg/l 2,4-D medium produced bulbs. These when transferred to medium with 1 mg/l BAP produced shoots. The shoots from experiment I and II were separated and rooted successfully on medium containing either 0.2 mg/l IBA or 1 g/l charcoal. The plants were established in soil mixture of sand : compost : top soil : 1:1:1. The survival rate was 98%.