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Callus formation and plant regeneration in *Lilium* asiatic and oriental hybrids

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Callus induction and subsequent plant regeneration was studies in four *Lilium* cultivars; viz. *Lilium* Asiatic hybrids cv. Golden Melody and cv. Orange Pixie, *Lilium* Oriental hybrids cv. Yelloween and cv. Crystal Light to standardize the type of explant and level of growth regulators. Different explants such as transverse thin cell layers of young stems (stem tTCLs) and bulb tissue (bulb tTCLs), Leaf pieces, shoot buds, / axillary buds and bulb scale basal segments were used to induce callus on MS media supplemented with BA and NAA at different concentrations and combinations. Cultures were established in Petri plates. Experiments were conducted according to a complete randomized design; each treatment had 10 samples and was replicated thrice. Data was analyzed using the computer soft ware; 'statistical package for agricultural workers'. Transverse thin cell layers of young stems recorded the highest callus initiation (85, 72, 82 & 81 % for cultivars Golden Melody, Orange Pixie, Yelloween and Crystal Light respectively) followed by bulb scale basal segments on MS basal medium supplemented with 0.5 mg/L BA and 1.75 mg/L NAA (83, 65, 81 & 81 % respectively for the same cultivars). Development of shoots was observed from callus cultured on MS medium supplemented with 0.5 mg/L BA. Percent callus formation varied for all explants among the different *Lilium* varieties used in the study. *Lilium* Asiatic hybrid cv. Golden Melody was most responsive (85 & 83 % callus formation for best explants; stem tTCL and bulb scale basal segments). Followed by, Oriental hybrids cvs. Yelloween and Crystal Light (82, 81 & 81 % each for best explants; stem tTCL

and bulb scale basal segments) Lowest percent callus formation was observed in the Asiatic hybrid Orange Pixie (72 & 65% for stem tTCLs and bulb scale basal segments). Among the auxins tried NAA at 1.0 mg/L was the best for rhizogenesis. Bulb formation and enlargement was enhanced with an increased sucrose concentration of 45 g/L supplemented to a plain MS medium. Rooted bulblets were successfully transplanted and grown in a potting mixture of FYM and soil at a ratio of 3:1 under green house conditions with 75% survival of bulblets.

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