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*Short Communication*

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# A short communication on *in vitro* propagation of tomatoes

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## DESCRIPTION

Tomatoes are important vegetables that have immense popularity over the past century. Tomatoes are one of the most important solanaceous plants grown worldwide. It is considered a very valuable and nutritious food. Today tomatoes are one of the most important vegetables in the world. Tropical, subtropical, and temperate zones are used to grow it. Due to the relationship between tomatoes and tobacco and the excellent processability that can be expected from tomatoes, several *in vitro* studies have been performed on tomatoes (Feito, 1996). This is because tomatoes have a low number of chromosomes and is a suitable host plant for *in vitro* studies based on extensive knowledge of tomato genetics. The development of protocols for *in vitro* selection may bring new advances in the production of stress-tolerant cultivars. The technique has been optimized for the production of haploid and somatic cell hybrids. Attempts have also been made to transfer the high regenerative capacity of wild varieties to cultivated tomatoes. Although some information on tomato morphogenesis is available, the technology has not yet been developed to the level that it can be used for large-scale propagation of commercially important cultivars (Jatoi, 2001).

Surface sterilization of the seeds was performed by immersing them in a solution of 1 ml Clorox (5.25% sodium hypochlorite) and 8 ml distilled water for 10 min followed by 3 rinses (5 min each) with sterile distilled water. The seeds were sprayed with ethanol and left for 15-20 seconds. Traces of alcohol were removed by washing (three times) with autoclaved distilled water. Sterilized seeds were transferred to sterile petri dishes. Seeds were inoculated into test tubes containing MS medium and transferred to a dark room for germination (Jones, 1996). Germinated seedlings served as the explant source for tissue culture experiments. Hypocotyl segments (1-2 cm) and leaf discs from 18-21 day old *in vitro* plants were excised under sterile conditions. Excised explants were cultured on callus induction medium. All cultures were transferred to the culture room for approximately 4-6 weeks. Compact callus was selected and used for regeneration at 25°C ± 2°C in a growth chamber. Callus derived from hypocotyls and leaf discs were transferred to other regeneration media. Specific hypocotyls and leaf discs were directly regenerated in the same medium. When

tomato shoots began to regenerate directly from the hypocotyl or from the callus, they were transferred to rooting medium (Masilionyte, 2016).

In general, MS medium supplemented with Naphthalene Acetic Acid (NAA), 6-Benzylamino Purine (BAP), Indole-3-Acetic Acid (IAA) and Kin gave the highest callus induction of about 65% in T5, 9.85% of hypocotyls failed to induce callus, and BAP concentration of 3 mg/l at a time was observed. Increased callus induction was observed in both explant sources. Researchers observed increased cell formation in two tomato hybrid cultivars. Bornia and Royesta with 5, 10, 20, and 30 µM increases in BAP. It seems that the presence of her BAP in high concentrations facilitated plant growth. This combination was used for regeneration and produced good fresh green callus on this particular strain. Root formation was observed only in one callus. The combination of NAA, BAP and Kin (T2) produced 38.4% of good callus, 13.4% of hypocotyls showed no germination and 5.7% of hypocotyls showed shoot regeneration and callus formation (Molnar Z, 2011). In this particular cultivar, BAP and NAA (T3) produced only 24.3% good callus. Germination was observed in 5.4% of hypocotyls. Callus induction is observed in both hypocotyl and leaf discexplants. Hypocotyls prov ed to be better explants for callogenesis and reg eneratin regeneration NAA (2 mg/L), IAA (2 mg/L), BAP (5 mg/L) and Kin (4 mg/l). Maximum regeneration was observed on MS medium containing Zeatin (1 mg/l) and IAA (1 mg/l).

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