

Alternate Carbon Source for Low Cost Efficient “KFA Plus” Medium for Micropropagation of *Lilium Asiatic* Plants and their Antioxidant Activity

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ABSTRACT

Like other agricultural crops, the production of flowering or ornamental crops play crucial role in the developing economics. *Lilium asiatic* is one of the exotic ornamental variety which is marketed at a high price and is also valued for immense medicinal properties. We developed an efficient low cost plant tissue culture medium “KFA and KFA plus” (Flyash” as the main source of inorganic constituent; Patented), as a replacement of expensive Murashige and Skoog’s medium. Present work was carried out with an objective to further lower the cost of the micropropagated plants in “KFA plus” using alternate carbon sources i.e. Sugar cubes (Daurala) and Mishri (Crystal sugar) instead of culture grade sucrose. The comparison was done on the basis of- % initial bulblet formation, % bulblet formation, % rooting and cost comparison between the media.

Best response was observed on KFA plus medium containing Sugar cubes and Mishri as carbon source with 85% and 81.3% bulblet formation respectively as compared to 83.3% in MS and KFA plus medium containing Sucrose. Healthy roots developed with 100% rooting efficiency in both the media containing different carbon sources; however MS media containing Mishri showed delayed rooting in about 30% of the plants which rooted in 40 days time. On hardening and field transfer, these plants showed 80% survivability with healthy bulb development and growth. ANOVA showed that there was no significant difference between the mean of different variables (MS, Flyash and Different carbon sources) used.

Therefore, use of KFA plus media along with sugar cubes and misri further lowered the cost of plants and reduction of disposal problem of thermal power plant waste, leading to phytoremediation. Anti-oxidant activity of leaf and bulb ethanol extracts of *Lilium* were also assayed using Hydroxyl Radical Scavenging Activities (HRSA) method and the percentage scavenging activity was calculated. Highest antioxidant activity was observed in KFA + misri grown bulb extracts.

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