Studies on the Micropropagation of *Gloriosa superba* by in Vitro Tuber Culture

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Gloriosa superba L. belongs to the *Liliaceae* family. It is a showy, climbing perennial vine and important flowering ornamental. *Gloriosa* flowers are showy with petals that are reflexed (turning upwards and backwards) and are produced in a range of colors including red, yellow, orange, and purple. After the growing season, the aerial shoots die leaving a 10- to 20-cm tuberous rhizome in the soil. The rhizome is bifurcated with a meristem at the tip of each limb. The rhizome tips are commonly called tubers. In horticulture practice, *Gloriosa* is traditionally propagated via these tubers, however, this yields a very low multiplication rate. Therefore, the objective of this study was to develop a micropropagation system for *Gloriosa*. We examined plant material source and hormone effects on induction, multiplication, shoot formation and proliferation, and tuber formation.

The tuber tips with the meristem proved to be good explants for tuber culture of *Gloriosa*. When meristems were cultured on a medium with 5.0 μM BA shoots formed. It was possible to multiply the shoots in large quantities on the medium containing 20 μM BA and 0.05 μM NAA. New tubers were formed when the shoots were transplanted to 5 μM 2ip or 1 μM NAA containing media.

Slices from tuber tips cultured on 5 μM 2ip + 0.05 μM NAA containing medium produced callus. This callus was proliferated by subculture on 10 μM 2ip + 0.5 μM 2,4-D medium. Shoot clusters were produced by transplanting the proliferating callus masses to medium with 10 μM BA + 0.05 μM NAA. It was also possible to develop new tubers on 5 μM 2ip or 1 μM NAA containing media, or directly by transplanting the callus to 5 μM 2ip + 0.5 μM IBA medium. During the micropropagation of *Gloriosa*, 2ip promoted tuber formation and BA promoted shoot multiplication.