An in Vitro Slow-Growth Callus Conservation Strategy for Important Medicinal Plants, *Camellia Japonica, Centella Asiatica, Ligusticum Afficinale, Panax Ginseng,* and *Sageratia Thea*

Hosakatte Niranjana Murthy
Department of Horticultural Science, Division of Animal, Horticultural and Food Sciences, Chungbuk National University, Cheongju, Republic of Korea

Abstract:
An efficient technique for preserving the genetic resources of commercially significant medicinal crops is in vitro callus conservation. Nevertheless, constant subculturing is an expensive and time-consuming procedure. Thus, it is necessary to develop an effective long-term in vitro conservation method that can be applied to different plant species. In order to optimize storage conditions and develop an appropriate in vitro conservation method, calli isolated from five medicinal plant species—*Camellia japonica* (Cj), *Centella asiatica* (Ca), *Ligusticum afficinale* (Lo), *Panax ginseng* (Pg), and *Sageratia thea* (St)—were employed in this study. Response surface methodology (RSM) was used to optimize pretreatment using sucrose (3–9%), methyl jasmonate (MeJA, 0–200 µM), and citric acid (CTR, 0–20 mg/L). The impact of pretreatment and storage temperature on callus conservation was assessed. After being stored at 15°C and supplemented with 3% sucrose, 135 µM MeJA, and 20 mg/L CTR, the medium greatly increased viability and regrowth, and calli could be kept for up to 120 days without subculturing. This method offers a productive and widely applicable in vitro strategy for the preservation of various plant genetic resources.

Keywords:
Plant cell culture, In vitro conservation, Antioxidant capacity, Methyl jasmonate, Citric acid.