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Rapid Propagation and Tropane Alkaloid Production of *Scopolia Parviflora* through Rhizome Cultures

Young-Min Kang*, Ji-Yun Min, Won-Jung Kim, Hee-Young Jung, Seung-Mi Kang, Dong-Jin Park,
Dae-Jin Yun¹, Jung-Dong Bahk¹, Myung-Suk Choi

Division of Forest Science, Gyeongsang National University, Jinju 660-701, Korea

¹Department of Applied Life Science, Gyeongsang National University, Jinju 660-701, Korea

Objectives

Two pharmacologically important of tropane alkaloids produced by *Solanaceae* plants, hyoscyamine and scopolamine many plants containing these alkaloids have been used for their medicinal, hallucinogenic, and poisonous properties. *Scopolia parviflora*, as used in this study, a *solanaceae* plants. It is edemic to Korea and has been classified recently as being a rare endangered species. However, it has not been researched the propagation and conservation of *S. parviflora*.

Material and Methods

A segment (2-3 cm) of rhizome per flask were cultured in several basal liquid media; 1/2 MS, 2MS and MS, 1/2B5, 2B5 and B5, WPM, SH, NP, White with sucrose 30 g/L. To determine the optimum conditions for multiplication of rhizomes, they were grown in 1/2 B5 medium with growth regulators; IBA, NAA, Kinetin, BA, GA3 and 2,4-D at various concentrations (0.1-2.0 mg/L). They were cultured on liquid culture medium in the flask (10 mL/100 mL) on a rotary-shaking incubator at 100 rpm under dark condition at $25 \pm 2^\circ\text{C}$ for 4 weeks. Tropane alkaloids from *In vitro* propagated rhizomes, plants and wild plants were extracted and then quantified with HPLC.

Results and Discussion

S. parviflora rhizomes 1/2 B5 basal medium with 3% sucrose showed highest rate of shoot propagation under *in vitro* culture conditions. The concentration of 1.0 mg/L GA3 was most effective in stimulating shoot propagation. Rhizome produced maximum of twelve shoots with the length being 8 cm, but root and callus formation was poor. Alkaloid contents varied from 0.47 to 3.40 mg/D.W for native plants, 0.88 to 2.22 mg/D.W for *in vitro* propagated plants and 0.52 to 1.68 mg/D.W in acclimatized plant. Among the alkaloids relatively high amounts are hyoscyamine (2.54 mg/D.W) and scopolamine (3.40 mg/D.W) was observed the roots to acclimatized plant. These findings on *S. parviflora* may also prove useful for its rapid *in vitro* propagation, germplasm conservation.

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