

## Physio-chemical impacts on efficient germination in *Platycodon grandiflorum* for. *duplex* pollen culture

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### Abstract

The highly valued ornamental plant, *Platycodon grandiflorum* for. *duplex* was generated by petaloidy of a calyx of *Platycodon grandiflorum*. The present investigation was executed to explore the several factors having effects on the germination of pollens with a view to acquire the underlying data for the artificial crossing to cultivate the species of *Platycodon grandiflorum* for. *duplex*. Both low and high temperature impaired the germination of *Platycodon grandiflorum* for. *duplex* pollens. The good germination rate was observed at the temperature of 25°C. The types and concentrations of carbon sources induced the differences in germination rate. The germination rate increased with the increasing concentration of sucrose and glucose except for fructose. Sucrose and glucose showed the highest results at the concentration of 20%. While fructose demonstrated the similar tendency to sucrose and glucose, it reduced the germination rate at the concentration of 20%. The highest germination rate was observed at the concentration of 15%. The appropriate carbon course for germination of pollens of *Platycodon grandiflorum* for. *duplex* was glucose of which germination rate was twice as high as that of sucrose and fructose. The germination rate was reduced substantially when the pH was close to alkali, and the potential germination rate was obtained at pH 6. Boric acid enhanced the germination rate at a lower concentration than the higher concentration.

**Keywords:** *Platycodon grandiflorum*, pollen germination, carbon sources, pH

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