



Effect of Acetosyringone Concentration on Hairy Root Induction in *Perovskia Abrotanoides* Karel.

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Hairy roots have several features, including their fast growth in hormone free media and capacity to synthesize bioactive chemical compounds. As, concentration of acetosyringone in co-culture media has a major role in hairy root induction, the main purpose of this study was to investigate the effect of this phenolic compound on hairy root induction in *Perovskia abrotanoides* Karel. Mmature seeds were cultured on hormone-free MS medium with 30 g/L sucrose and 6.5 g/L agar and kept in the culture room at 25±1°C under cool white fluorescent light at 40 µmol/ m²s under 16/8 h light/dark photoperiods. Three *Agrobacterium rhizogenes* strains (A4, A7, and ATCC15834) were used to infect the wounded nodes of one-month plantlets of *P. arbotanoides*. Infected plantlets were cultured with different concentrations (0, 100, 150, 200 µM) of acetosyringone. After 2 days, the explants were transferred to a fresh MS medium containing 400 mg/L cefotaxime and the percentages of hairy root formation were reported after 20 days of cultivation. Transgenic identity of hairy roots was confirmed by PCR using *rolC* specific primers. According to the results, all of the three types of *A. rhizogenes* strains could induce hairy roots on the nodes and their Ri plasmids were integrated into the genome of host cells. Also, the effects of acetosyringone concentration on hairy root induction, *A. rhizogenes* strain and their interaction were significant ($p<0.05$). The highest percentage (81.22%) of hairy root induction was obtained with the ATCC15834 strain at 150µM concentration of acetosyringone. With the application of acetosyringone at this concentration, a drastic increase (28.46%) was achieved in hairy root induction efficiency, as compared to the control. Further increase in the concentration of acetosyringone reduced the frequency of hairy root induction. In conclusion, the results suggest that acetosyringone as a phenol secreted by wounded plant tissues, influences on hairy root induction and transformation rate of the infected explants in *P. arbotanoides*.

Keywords: *Perovskia abrotanoides* Karel., *Agrobacterium rhizogenese*

References

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