

# Effect of the Number of *rol* Genes Integrations on Phenotypic Variation in Hairy Root-Derived *Hypericum perforatum* L. Plants

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The extent of phenotypic variation of St. John's wort (*Hypericum perforatum* L.) plants transformed with wild agropine ATCC 15834 *Agrobacterium rhizogenes* plasmid was evaluated with respect to the number of *rol* genes integrations. The transfer of T<sub>L</sub>-DNA to plant explants during each transformation event was incomplete with different *rolA*, *rolB*, and *rolC* copy numbers. Along with typical features representing the hairy root syndrome, an altered size, number and density of dark and translucent glands, changes in ability to synthesize secondary metabolites, and reduced fertility were observed. The highest copy number of transferred *rol* genes resulted in weak expression of transgenic character and comparable quantitative parameters with the controls. Only 1 out of 11 transgenic clones was able to produce seed progeny and not more than 4 out of its 35 offsprings were positive for *rolC* gene integration. Sterility of the clones was due to retarded development of both gametophytes.

**Key words:** St. John's Wort, Transgenes Copy Number, Secondary Metabolites