



HP-36: Effect of chemical elicitor AgNO₃ on biomass and pharmaceutical secondary metabolites of three *Datura* transgenic hairy roots induced by *Agrobacterium rhizogenes*

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Subject description: Biotechnological ways of pharmaceutical compounds production has become important through the in vitro cultures of plant parts and organs for their high growth rate and large molecule profile. This is why we have chosen transgenic hairy roots of *Datura stramonium*, *Datura innoxia* and *Datura tatula* to produce hyoscyamine and scopolamine which are used in many drugs as analgesic and antispasmodic agents.

Objectives: This study aims to investigate the effect of AgNO₃ as chemical elicitor used in two different time of contact of 24 hours and 48 hours on biomass, hyoscyamine and scopolamine yield in transgenic hairy roots of three lines of *Datura* previously induced using A4 strain of *Agrobacterium rhizogenes*.

Methods: To study the effect of AgNO₃ on biomass and tropane alkaloids of the hairy roots 100ml of 1mMol of AgNO₃ liquid solution. For elicitation 5 ml of the sterilized solution is used for 24 and 48 hours elicitation time. Hairy roots are harvested after 21 days of culture

Results and discussion: AgNO₃ did not optimize the biomass of the two root lines DS and DT. However, 74% increase in biomass was obtained in the line DI line after 48 hours of treatment with a 1mM AgNO₃ solution. The average hyoscyamine concentration of the DS and DT root lines is optimized after 48 hours of elicitation with silver nitrate, yielding the optimum outcome. 7.89 mg/g DW in the DT line. Scopolamine content increases in both lines compared to controls following 24 and 48 hours of silver nitrate elicitation, with the best scopolamine result achieved in the DT line elicited for 24h (0.539 mg/g DW).

Conclusion: The use of AgNO₃ as chemical elicitor can be used to produce Scopolamine in *Datura* species but not for the improvement of biomass or hyoscyamine because of enzymatic pathways influence.

Keywords: *Datura*, Hyoscyamine, extraction, LC-MS-MS, tropane Alkaloid, Biomass, hairy root.