

Secondary metabolites of *Bougainvillea spinosa* with antioxidant activity through callus grown *in vitro* under physical stress

Plant breeding

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Plant tissue culture is an attractive alternative source of bioactive compounds, like secondary metabolites (SM). Elicitation by abiotic factors can be an important strategy towards improved *in vitro* production of these compounds. *Bougainvillea spinosa* is a woody species native to Argentina, which has been little studied in this aspect. The objective of this work was to evaluate if different physical stresses can induce the production of SM with antioxidant activity (AO) in *B. spinosa* callus obtained *in vitro*. The callus were laid in solid MS medium at half concentration with 30% sucrose for one month in two stress conditions: 1) saline stress with 150 μM NaCl; 2) UV light stress on the fifth day of culture. A control group was maintained in $\frac{1}{2}$ MS. After culture, an extraction of the SM was carried out using 65% methanol as solvent. The AO of the extracts was measured through the DPPH and ABTS methods. The results showed that the stress induced by NaCl failed to elicit the synthesis of SM with AO in respect to the control group. However, extracts obtained from callus exposed to UV light stress increased AO in both methods (91.8 \pm 8 and 150.6 \pm 7 μmol troloxEQ/100 g fresh callus for DPPH and ABTS, respectively), with respect to the control (72.1 \pm 9 and 108.3 \pm 4 μmol troloxEQ/100 g fresh callus for DPPH and ABTS, respectively). These results are relevant as they show that UV light stress could be a physical elicitor for obtaining secondary metabolites with antioxidant activity in *B. spinosa* callus.