Bauhinia variegata calli as source for the obtaining bioactive phenolic compounds

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Callus cultures are economically viable alternatives for in vitro production and extraction of bioactive secondary metabolites. Bauhinia variegata is a species of Brazilian Cerrado used in traditional medicine as astringent, healing and anti-inflammatory, many of its activities are related to the presence of phenolic compounds present in the bark and leaves. In order to induce calli and evaluate total phenol and flavonoid contents in B. variegata, leaf explants (obtained from in vitro seedlings) were placed in MS medium supplemented with 30 g L⁻¹ sucrose, solidified with 7 g L⁻¹ agar, plus 2,4-D (0, 4.52, 9.05, 18.10 μM) and BAP (0, 4.44, 8.88, 17.75 μM) and their possible combinations, in the presence and absence of light. At 45 days after inoculation, were evaluated: a) percentage of callus induction and contamination; b) fresh and dry matter; c) phenol and flavonoid contents. The data were submitted to ANOVA and the means were compared by the Tukey test (p≤0.05). Callus induction occurred nine days after inoculation, both in the presence and absence of light, only in media supplemented with growth regulators, regardless of concentration and combination tested. Callus with higher biomass accumulation were obtained from the associated use of 4.52 μM 2,4-D and 4.44 μM BAP, in the presence of light. The dry mass values for this treatment were, on average, 150 ± 0.04 mg. This treatment produced 71.95 ± 5.10 μg GAEq mg⁻¹ CE and 17.44 ± 2.13 μg RutEq mg⁻¹ CE for phenolics and flavonoids contents, respectively. It should be noted that the values of the secondary metabolites found in the hydroethanolic extract of these calli are statistically higher than those found in the initial explant. This study provides important information regarding the differential role of the combined use of auxins and cytokinins in callus induction and in vitro production of bioactive phenolic compounds in Bauhinia variegata.

Keywords: in vitro cultures, 6-benzylaminopurine, 2,4-dichlorophenoxyacetic acid, callus.

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