

Effects of Activated Charcoal on Cellular Protein Contents During the Somatic Embryo Maturation in Sugarcane

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Plant biotechnology tools, such as somatic embryogenesis, could be useful for the improvement of sugarcane (*Saccharum* sp.) production. This work aimed to study the effects of activated charcoal (AC) and 2,4-dichlorophenoxyacetic acid (2,4-D) in the metabolism of protein during maturation of somatic embryos in sugarcane. The maturation assay was carried out using embryogenic cultures of the CB45-3 variety, inoculated on MS medium supplemented with different concentrations of AC (0, 1.5 and 3.0 g.L⁻¹) combined with 2,4-D (0 and 10 µM). Samples of fresh matter (FM) were collected weekly during 28 days of culture and stored to protein extraction. Soluble and insoluble proteins were extracted using phosphate buffered saline (PBS) and Tris-HCl buffers, respectively. Proteins contents were quantified by Bradford method. Only treatments containing AC allowed somatic embryos maturation, with the combination of AC (1.5 g.L⁻¹) and 10 µM of 2,4-D showing the best rate of somatic embryo maturation. In this treatment, a significant increment in total protein content at 14th day of culture occurred, changing from 1.8 to 3.5 mg.g⁻¹ FM and from 1.7 and 1.9 mg.g⁻¹ FM, to soluble and insoluble protein contents, respectively. It was not observed a significant change in protein content among the treatments that not allowed somatic embryo maturation. Finally, AC induced the increase of protein content associated with the maturation of somatic embryo in sugarcane.

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