



## IMPROVEMENT OF MEDIUM FOR *MISCANTHUS* × *GIGANTEUS* CALLUS INDUCTION AND PLANT REGENERATION

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*Miscanthus* × *giganteus* tissue cultures brown quickly and strongly, probably as an effect of oxidation of phenolics produced by plant tissue. The aim of the work was to improve the medium composition for callus induction and plant regeneration of *M. giganteus*, with two experiments. The first one was aimed at developing a protocol to inhibit biosynthesis and oxidation of phenolics. Callus was induced from immature inflorescences on basal MS medium with  $6.5 \text{ mg} \cdot \text{dm}^{-3}$  2,4-D,  $0.25 \text{ mg} \cdot \text{dm}^{-3}$  BAP,  $500 \text{ mg} \cdot \text{dm}^{-3}$  casein hydrolysate and  $30 \text{ g} \cdot \text{dm}^{-3}$  sucrose (control medium), and this medium supplemented with one of the following:  $200 \text{ mg} \cdot \text{dm}^{-3}$  chitosan,  $65 \text{ g} \cdot \text{dm}^{-3}$  banana pulp (BP),  $100 \text{ mg} \cdot \text{dm}^{-3}$  cysteine, or  $30 \text{ g} \cdot \text{dm}^{-3}$  honey instead of sucrose. Plant regeneration used basal MS medium supplemented with  $30 \text{ g} \cdot \text{dm}^{-3}$  sucrose and  $0.2 \text{ mg} \cdot \text{dm}^{-3}$  BAP or  $0.05 \text{ mg} \cdot \text{dm}^{-3}$  KIN. The second experiment was to verify whether BP and honey increase callus production and plant regeneration. For callus induction the explants were put on the control medium and medium supplemented with one of these:  $65 \text{ g} \cdot \text{dm}^{-3}$  BP,  $30 \text{ g} \cdot \text{dm}^{-3}$  honey instead of sucrose, or  $65 \text{ g} \cdot \text{dm}^{-3}$  BP +  $30 \text{ g} \cdot \text{dm}^{-3}$  honey instead of sucrose. The regeneration medium was basal MS medium supplemented with  $0.05 \text{ mg} \cdot \text{dm}^{-3}$  KIN and  $30 \text{ g} \cdot \text{dm}^{-3}$  sucrose or  $30 \text{ g} \cdot \text{dm}^{-3}$  honey. Tissue browning was independent of medium content, but there was less browning on medium supplemented with honey. In the first experiment, regenerated plants were obtained only on basal MS medium with  $30 \text{ g} \cdot \text{dm}^{-3}$  sucrose and  $0.05 \text{ mg} \cdot \text{dm}^{-3}$  KIN. In the second experiment, MS medium containing BP and honey instead of sucrose was the best medium for callus induction, and regeneration from these calli was highest on basal MS with KIN and honey.

**Key words:** banana pulp, chitosan, cysteine, embryo-like structures, honey, *Miscanthus*, phenolic oxidation, regenerants, tissue browning.

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