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Isolation and culture of protoplasts of Côte d'Ivoire's pearl millet (*Pennisetum glaucum* (L) R) varieties

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ABSTRACT

Objective: Protoplasts are the ideal material for genetic transformation of plants. This requires that the protoplasts have the ability to regenerate whole plants. The objective of this study is to isolate protoplasts from cell suspensions and test their ability to regenerate embryogenic calli and plants.

Methodology and results: Protoplasts were isolated with different enzyme combinations, from cell suspensions of millet, *Pennisetum glaucum*. Obtaining callus from protoplasts was carried out on various media at various pH with different glucose concentrations. Approximately 13,106 protoplasts / g were isolated from cell suspensions. Calli were regenerated by culturing the protoplasts at pH 5.8, at a concentration of 0.7 M glucose in either the liquid medium or solid medium. The plating efficiency of protoplast is from 0.012 to 0.013 in solid medium containing 0.6% agarose. No plant has been regenerated from calli provided from protoplasts. All plant regeneration attempts resulted in the formation of globular structures. Cytological studies have shown that the calli derived from protoplasts are formed with 50% of multinucleate cells.

Conclusion and application of results: This study allowed isolating protoplasts, regenerating embryogenic calli from protoplasts of millet varieties of Côte d'Ivoire and highlighting one of the causes of the recalcitrance of the grass crop culture regeneration from provided protoplasts. This study will allow genetic transformation of millet varieties by using protoplasts.