In vitro cloning of two cumin landrace lines via shoot-tip culture.

Tawfik, A.A. and M. F. Mohamed

Abstract:

Shoot-tip explants were excised from axenic and non-axenic plant cultures of two cumin (Cuminum cyminum L.) landrace lines from Assiut (ASS) and Qina (QIN), Egypt. Explants were cultured on MS (Murashige and Skoog, 1962) medium supplemented with different concentrations of benzyladenine (BA) or kinetin. The two landraces performed similarly throughout the study. Shoot-tip explants from axenic cultures were superior to those prepared from non-axenically grown plants regarding the percentage of explants that produced micro-shoots and the number of micro-shoots that proliferated. The maximum number of excisable micro-shoots was produced on medium with 1 μM BA. Up to 20 micro-shoots per explant were excised from cultures on this medium. The largest number of micro-shoots obtained on medium containing kinetin was five. Most (80-90%) micro-shoots formed roots on medium with 1 μM indole-3-butyric acid (IBA) and 2% (w/v) polyethylene glycol (PEG-6000). The survival rate ex vitro was as high as 70%. A high concentration of BA (4 μM) induced calli, retarded elongation of the micro-shoots and reduced both the number of roots formed on subsequent rooting medium, and plant survival ex vitro. This study supports the feasibility of in vitro cloning of cumin using shoot tips for germplasm collection, conservation and exchange.

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