ABSTRACT

An efficient and reproducible protocol was established to examine *in vitro* regeneration potential of chickpea (*Cicer arietinum* L.) cv. PB-2008 and genetic fidelity of direct and indirectly regenerated plants was assessed. Seeds were treated with 40% bleach and 0.1% Mercuric Chloride for surface sterilization. MS medium was used for seed germination. Three explants such as cotyledonary node, internode and node were selected from 7 days old *in vitro* grown seedlings. Different culture media were tested for callus induction. MS medium supplemented with 2 mg/L NAA and NAA+BAP (0.5 mg/L) showed good response. The callus was sub-cultured for shoot induction on MS medium supplemented with different concentrations of plant growth regulators. The callus obtained under 2 mg/L NAA showed good results for shoot induction and elongation on MS medium along with NAA (1 mg/L) and IBA (2 mg/L). Healthy shoots were transferred to root induction medium containing IBA + IAA (1 mg/L) where roots were induced within 10 days. For direct regeneration MS medium supplemented with 2 mg/L IBA proved best. The regenerated plantlets were acclimatized in different potting mixtures. In sand and soil (1:1 and 3:1) plantlets were survived upto 30 days. DNA was successfully extracted for RAPD analysis. Ten RAPD primers were used during PCR amplification. Results revealed that directly regenerated plants were genetically stable but indirectly regenerated plants had genetic variations.