

## ABSTRACT

A reproducible regeneration system for chickpea (*Cicer arietinum* L. cv. PB-2008) was established. Organogenic ability of different explants (shoot tip (ST), internode (IN), node (N), cotyledonary node (CN) and root (R)) was tested on MS medium supplied with varying levels of auxins and cytokinins. MS medium devoid of PGRs was used as control. The effectiveness was observed at various combinations. The evaluated parameters were included percentage of callus induction, callus induction, number of days for callus induction and callus morphology. Results revealed that lower concentrations of NAA (0.5-2.0 mg/l) alone were found to be most effective for callus induction. Minimum days of initiation of callus were recorded at 2.0 mg/l of NAA from CN, N and IN (8, 8, 7 days respectively). In combined composition of PGRs NAA+ BAP (0.5+ 0.5 mg/l) showed best callogenesis. Induction of shoots from callus, it was shifted on half reduced concentration of working medium which improved the initiation of shoots. For elongation of indirect shoots, medium was fortified with 0.5 BAP+0.5 NAA (mg/l). Callus of CN and N was able to initiate induction of shoots. For induction of direct shoots, MS medium was supplemented with BAP and KIN. Of the four different explants tested, BAP was found to be best than Kinetin for shoot multiplication. But their accumulative (BAP+ KIN) application was found to be more efficacious. Minimum shoot induction duration was recorded 4, 5 and 5 days for CN, N, ST respectively. Maximum shoot length was recorded 7 cm with maximum number of shoots. Individual shoots were aseptically excised and sub-cultured for root induction medium supplemented with 0.5 IBA+ 0.5 IAA. The major objective of this study was to overcome the notoriously recalcitrant behavior of chickpea in *in-vitro* culturing.