ABSTRACT

Among all used PGRs, in solo auxins the best callus formation was obtained from IAA. The best indirect shooting response was obtained from NAA with BAP + IBA from root callus while IBA gave best direct shooting response from apical bud. Among cytokinin in solo the best results were obtained from BAP. The best indirect shooting response was obtained from BAP with BAP +IBA while best direct shooting response was obtained from apical bud with BAP. Among all PGRs in combination TDZ + IBA gave best result for callus formation and regeneration. The results of ANOVA were significant for all solo PGRs for all variables except BAP for shoot initiation days. In combination of PGRs the results of ANOVA were significant at all concentrations except KIN + 2,4-D for all, KIN + IAA for shoot number, length and TDZ and IBA for shoot length. The optimum value of Duncan in solo PGRs for initiation days were insignificant except NAA, 2, 4-D and BAP while for shoot number and length all values were significant except IBA and BAP for shoot. In combination of PGRs for initiation days, shoot number and shoot length the optimum value for Duncan were significant except TDZ +IBA for shoot length. Total seven compounds were identified by GC/MS from *in vivo* sample of leaf and total 6 compounds were identified from callus culture of cotyledonary leaf. Two compounds p-xylene and Benzene, 1, 3-dimethyl were present in both samples but with different retention time, percentages and mass peaks.