

ABSTRACT

Among all used solo auxins best result in shoot formation was observed on different concentrations of NAA while in solo cytokinin best result in shoot formation was observed from different concentrations of BAP. Among all used PGRs in combinations KIN + 2,4-D showed better shoots formation and shoot length. For callus production among all used PGRs auxins in solo the best result was observed on different concentrations of IAA while from cytokinins, best callus was induced from different concentrations of BAP. From all used PGRs in combination BAP + NAA and KIN + 2,4-D produced best callus on different concentrations. The optimum values of ANOVA for shoot number were insignificant on all concentrations except NAA, IAA, IBA solo and KIN+2,4-D in combinations, for shoot length values were significant on all concentrations except KIN+2,4-D. The optimum values of Duncan for shoot number were insignificant on all concentrations except IAA and TDZ and for shoot length values were significant on all concentrations except NAA, KIN in solo and KIN+2,4-D. Total nine compounds were identified by GC/MS from *in vivo* sample of rhizome while 6 compounds were identified from callus culture of rhizome. Four compounds Heptane-2,5- dimethyl, Undecacane-2,6-dimethyl, 2-Benzenedicarboxylic acid and diisooctyl ester were present in both samples but with different retention time and percentages.