ABSTRACT

In this study, the optimization of conditions for seed germination, effect of different combinations of plant growth regulators for callus formation and the comparative analysis of secondary metabolites of two varieties of *M. charantia* i.e. Jaunpuri and Jhalri were studied.

Conditions were optimized for the seed germination in lab. It was found that unsoaked seeds of both varieties of *M. charantia* produced highest germination percentage in petriplate containing 20ml distilled water at 28°C when surface sterilized with 0.1% $HgCl_2$ for 10 minutes.

Cotyledon explant of cv. Jaunpuri responded best for callus induction in medium MS2 (1.0mg/l BAP + 1.5mg/l 2,4-D). Callus index was 400 and yellow green granular callus was formed whereas callus initiation occured in 8 days. Cotyledon explant of Jhalri variety responded best in medium MS3 (1.5mg/L BAP + 1.0mg/L 2,4-D) for callus formation and time duration for callus initiation was 9 days with callus index of 400. Leaf explants of both varieties produced green and granular callus in medium MS3 (1.0mg/l BAP + 1.5mg/l 2,4-D). Initiation of callus occurred from leaf explants of Jaunpuri variety in 8 days and callus index was 150, whereas in Jhalri variety initiation of callus occurred in 9 and callus index was 75. Internode and apical bud of both varieties produced positive results in medium MS2 (1.0mg/l BAP + 1.5mg/l 2,4-D). It was observed that time taken for the initiation of callus formation in apical bud was higher than the internode. Internode explant of cv. Jaunpuri produced yellow green and granular callus and callus index was 200. Internode explant of cv. Jhalri produced green and granular callus and callus index was 150. Apical bud of cv. Jaunpuri initiated callus formation in 13 days to form green granular callus. Callus index was 150. Brown green and granular callus was formed by apical bud of cv. Jhalri and callus index was 225. Best calli from explants of both varieties in different concentrations and combinations of media were put to GC-MS analysis for secondary metabolites.