

ABSTRACT

Conditions optimized for *in vitro* seed germination of *Cichorium intybus* were 0.1% Mercuric Chloride for 10 minutes in 10cm Petri plates with 15ml distilled water at 26.5 °C. In 0.5% sucrose solution seed germination was achieved in 4 days as compared to distilled water where it was accomplished in 6 days. Plantlets thus obtained were used for the procurement of explants.

Callus formation from cotyledons was best observed in 0.45mg/L BAP and 1.39mg/L NAA when used singly, as well as, when they were used in combination. Calli produced and cotyledons obtained from plantlets grown in 0.5% sucrose solution and in soil were chemically analyzed by GC-MS technique for their volatile constituents and their evaluation. Highest number (24) of compounds were detected in the control *i.e.*, in cotyledons obtained from plantlets grown in 0.5% sucrose solution and least *i.e.*, 12 in the other control, the cotyledons from plantlets grown in soil. In calli more compounds were observed when combinations of PGRs were used as compared to the situation when they were used singly. These variations are attributable to the fact that plants or explants respond best in respect to metabolites production when they are provided with some sort of supplements either in the form of energy source *i.e.*, sucrose solution or PGRs which probably enhance their metabolic activities.

Xylene was the compound which was produced most abundantly around 40% in overall composition of different compounds produced in most of the *in vitro* treatments. The other compounds which were detected in higher concentrations were 1,3-Cyclopentadiene, 5-[1-methylethylidene]-, Ethylbenzene and Ethanedioic acid, mono[phenylmethyl] ester.