International Journal of ChemTech Research
CODEN(USA): IJCRGG, ISSN: 0974-4290, ISSN(Online):2455-9555
Vol.9, No.12pp 141-149,2016

Establishment of in vitro root culture of *Cichorium endivia* subsp*, pumelum* L. –a multipurpose medicinal plant

Ahmed Amer[1], Mona Ibrahim[1], Mohsen Askr[2]

[1]Plant Biotechnology Department, National Research Centre, Dokki, Cairo, Egypt.
[2]Microbial Biotechnology Department, National Research Centre, Dokki, Cairo, Egypt.

Abstract: There is a great interest in the production of biologically active substances from plant origin in today's world. Since chicory roots serve as the major source of valuable secondary metabolites, the aim of this study was to develop an efficient protocol for the in vitro root culture of chicory. Medium supplemented with 0.5mg/l NAA and 1mg/l IBA was found to respond maximum with 91% (leaf), 76% (hypocotyl) and 94% (root) for root induction. The maximum biomass accumulation obtained from leaf, hypocotyl and root derived adventitious culture (4.098g, 3.163g and 4.500g respectively) was obtained on the medium contained 0.5mg/l NAA and 0.8mg/l IBA. While a significant increase in rooting response percentage was recorded for leaf (17%), hypocotyl (15%) and root (8%) cultured on half-strength MS medium compared to that cultured on full-strength MS medium, there was no significant differences recorded for the accumulation of root biomass. There was stimulatory effect of total dark condition on root induction and production in all types of explants. A maximum amount of fresh root biomass (9fold) was produced 6 weeks after culture. Moreover, further analysis showed that inulin obtained from our protocol is closely similar to that obtained from open field cultivation in terms of quality and quantity. This simple reproducible *in vitro* root culture system can be used for the production of adventitious roots and for the subsequent production of useful natural compounds from chicory, thereby providing an efficient alternative method to the field cultivation of intact plants.

Key words: *Cichorium endivia* subsp*, pumelum***,** root culture system, root induction and production, Inulin quantity and quality.

*****