20 YEARS OF EXCELLENCE IN INTERNATIONAL MEETINGS
alliedacademies.com

World Congress on

PLANT GENOMICS AND PLANT SCIENCE

November 23-24, 2018 | Bangkok, Thailand

J Agric Sci Bot 2018, Volume 2 | DOI: 10.4066/2591-7897-C2-006

INTERACTION IN PLANT GROWTH REGULATOR AND PHYSIOLOGICAL PROCESSES TO CONTROL PLANT REGENERATION AND *IN VITRO* DEVELOPMENT OF *TULBAGHIA SIMMLERI*

Aloka Kumari
University of KwaZulu-Natal Pietermaritzburg, South Africa

The endogenous auxin and cytokinin contents of *in vitro* regenerated *Tulbaghia simmleri* maintained on applied plant growth regulators in Murashige and Skoog (MS) medium were investigated using UHPLC-MS analysis. The highest number of shoots (27.6 per leaf) were produced in MS medium supplemented with 2.5 µM thidiazuron. A higher number of these shoots were rooted with 10 µM 6-(2-hydroxy-3-methylbenzylamino) purine (PI-55, cytokinin antagonist). Production of somatic embryos (SEs: 16.4 – 4.6, globular to cotyledonary stages) improved significantly with liquid MS medium containing 2.5 µM picloram, 2.5 µM phloroglucinol (PG) and 1.5 µM gibberellic acid or 1.5 µM PI-55 and 1.0 µM trans-zeatin. SEs (torpedo and cotyledonary stages) germinated (100%) in plant growth regulator free MS medium. The plantlets were acclimatized, and all survived in the greenhouse. Higher levels of endogenous auxin, 2-oxindole-3-acetic acid (oxIAA, 371.52 pmol/g DW) and indole-3-acetylaspartate (IAAsp, 141.56 pmol/g DW) were detected in shoots from PG treatments. The roots of garden-grown-mother plants possessed the highest level of indole-3-acetic acid (IAA, 630.54 pmol/g DW) and oxIAA (515.26 pmol/g DW). Cytokinins [CKs: trans-zeatin-O-glucoside (tZOG), cis-zeatin (cZ) and N6-isopentenyladenosine-5´-monophosphate (iPRMP)] levels were relatively high in shoots and roots of plantlets *in vitro*. However, PI-55 treatments influenced the development of plantlets promoting a higher biosynthesis level of iPRMP (418.06 pmol/g DW in root) and cZRMP (904.61 pmol/g DW in roots and 1427.83 pmol/g DW in shoots). The reported protocol highlights the significance of exogenous and endogenous hormonal effects on large-scale production of *in vitro* plant development and improves the understanding of physiological processes of CK metabolism, signalling and transport in *in vitro* development.

Note: