IN VITRO REGENERATION OF CASTOR PLANT UNDER THE INFLUENCE SUCROSE OSMOTIC STRESS

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ABSTRACT

Environmental stress results in water deficiency for plant, thus impairing its numerous biological roles. In vitro screening for stress tolerance will have its significance in identifying cultivars with optimal stress tolerance and productivity. Studies on castor plant (*Ricinuscommunis*) could improve our understanding of the mechanism of plant resistance to drought stress. This investigation was aimed at examining the effect of osmotic stress generated by sucrose on shoot length, fresh weight shoot, fresh weight leaves, plant regeneration and chlorophyll content related to drought stress. Nodes of three *Ricinus*accessions (cultivar 004, 005, 006) were cultured on MS (MS macro and microelements) medium with addition of 1.6 mg BAP (6-benzylaminopurine) and 0.08 mg of IAA (Indole acetic acid). Different levels of osmotic stress were induced by using two concentration of sucrose (0% and 6%) in MS medium.

Accession 004 is resistance to drought stress than accession 005 and 006. Cultivar 004 under control and sucrose levels has the highest growth parameters such as shoot fresh weight, plant regeneration percentage, plant height and leaves fresh weight than other accessions 005 and 006 but there was no significant difference in leaves numbers among the accessions. In turn cultivar 004 have the highest chlorophyll a and carotene than the other accessions. Accession 006 showed reduction in chlorophyll a content and physiological growth parameters than other accessions raised under 6% sucrose. Therefore, accession 004 is resistance to drought stress whereas; accession 006 is a drought sensitive. Farmers especially those in semi-arid and arid regions of Nigeria is therefore encouraged to cultivate castor accession 004 in order to obtain optimal castor yield.