

Response of Clementine Mandarin seeds for germination and callus initiation and Alkaloids, hormones production *in vitro*

Ayad Assi Obaid *Wessam Malek Dawood * Nour Sabry Nasser

College of Agriculture/ Univ. of Diyala

*College of Education and pure Science/ Univ. of Diyala

Abstract

This study was conducted in plant tissue culture Lab. Horticulture Dept., College of Agriculture, Diyala University to evaluated the effect of plant growth regulators, North and South pole of magnetic field on common mandarin (*Citrus reticulata* L. Blanco) seedling growth and callus initiation. Seeds were cultured on solidified MS medium to study the impact of increasing magnetic field flood on the production of some plant

growth regulators, alkaloids callus initiation. Results can be summarized as follows: Kinetin at concentrations (0.0, 1.0, 2.0, 3.0, 4.0) mg/L for 8 weeks of treatment showed that the control treatment gave taller roots (30) mm while the treatment 4.0 mg/L gave the highest number of shoots 1.7 shoot/ seedling. In the magnetic field experiment, the effect of north and south pole of magnetic field 200 mT for six periods (0 , 2 , 6, 11 , `14 , 18) days, showed that the treatment of 18 days gave the best shoot length 22mm.

When the medium supplemented with 2mg/ l 2,4-D enhances callus initiation, while the combine of 2,4-D and TDZ reduced the rate of initiation and growth of callus. The production of hormones and alkaloids from mandarin callus exposed to1, 2 or3 magnets recorded the highest amount of Kin in the presence of 3 magnets giving 125.45 µg/ g while the highest amount of ABA, GA , IAA was found in control callus

which gave (91.61, 76.25, 51.18) $\mu\text{g/ g}$ respectively. Alkaloids yield showed the presence of Octapamine in the treatment of 3 magnets yielding 73.74 $\mu\text{g/g}$. The highest amount of Synephrine reached 366.99 $\mu\text{g/ g}$ in the treatment of 3 magnets while the amount of Tyramine recorded 79.02 $\mu\text{g/ g}$ in the treatment of two magnets. Ephedrine was higher in the callus that not being exposed reached 219.99 $\mu\text{g/ g}$.