

## Plantlet regeneration from root segments of Date palm tree (*Phoenix dactylifera* L. cv. Barhee) producing by *in vitro* culture

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**Abstract.** This study was conducted during two seasons growth (2010/2011) in order to induction of root segments taken from plantlets producing by *in vitro* culture on growth and differentiation to produce direct and indirect shoots by organogenesis method. The results showed the ability of root segments to produce direct shoots when cultured by MS medium supplied with 2.0 mg.l<sup>-1</sup> BA and 0.2 mg.l<sup>-1</sup> NAA. This treatment was a high significant in the percentage of response for direct shoot induction and number of shoots/explant comparison with other treatments reached 41.67 % and 4.6, respectively. Also, these results showed the possibility of root segments on callus induction when cultured in MS medium supplemented with 40 mg.l<sup>-1</sup> 2,4-D and 3 mg.l<sup>-1</sup> 2ip. This callus formation gave a high significant rate of response to producing the indirect shoots when this callus is re-cultured at the first time in MS medium supplied with 0.5 mg.l<sup>-1</sup> BA and 0.1 mg.l<sup>-1</sup> NAA, which reached to 53.34 %. Also, the MS medium supplied with the same concentration of BA recorded the highest rate of proliferation reached 5.2 shoot/100 mg callus.

**Key Words:** Date palm, *in vitro*, organogenesis, proliferation, root segment, shoot.

**Introduction.** The Date palm (*Phoenix dactylifera* L.) is an important source of high quality food for humans and animals (Al-Baker 1972). There are more than 600 cultivars of Date palm planted in Iraq. The Barhee cultivar is the best of Date palm varieties that the Iraqi grower would like to cultivate and propagate. The propagation method by offshoots is traditional method of vegetative propagation common of the Date palm. This cultivar is characterized by low production of offshoot numbers and the difficulty of getting them for expensive prices. Many researchers turn to the propagation of Date palm by tissue culture technique to overcome their difficult (Muter 1991). Some researchers used the shoot tips and axillary buds as explants for micro propagation of Date palm tree (Hassan 1987; Al-Khalifa 2007; Ibrahim 2008). Many of researchers got positive results when they used the other explants such as root segments because the most plant organs have the capacity to grow if there are optimum conditions of growth media and environmental factors (Al-Taha 2008). Smith & Thomas (1973) were able of callus induction from roots of coconut seedlings cultured *in vitro*. Smith (1975) showed the possibility of stimulating adventitious buds to form plantlets from induction callus of date palm roots by *in vitro*. Due to the fact that the most of the Date palm trees cv. Barhee in Iraq are old ages, passed the stage of producing offshoots, they are in small number and endangered, the current study was conducted in order to use other explants such as root segments for the purpose of propagation of date palm trees *in vitro* rather than vegetative explants.