USING INFLORESCENCES FOR *IN-VITRO* PROPAGATION OF SOME DATE PALM GENOTYPES

By

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A Thesis Submitted in Partial Fulfillment

Of

The Requirements for the Degree of

DOCTOR OF PHILOSOPHY
in
Agricultural Sciences
(Pomology)

Department of Horticulture

Faculty of Agriculture

Ain Shams University

2019

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LIST OF ABBREVIATIONS

2,4-D	Dichloro-phenoxyacetic acid
NAA	Naphthalene acetic acid
IAA	Indol acetic acid
NOA	2-Naphthoxy acetic acid
IBA	Indol butyric acid
Picloram	4-amino-3,5,6-trichloropicolinic acid
2iP	N6-(2-Iso-Pentenyl Adenine)
BA	N6- Benzyl Adenine/ N6 benzyl amino purine
AC	Activated charcoal
MS	Murashige and Skoog medium (1962)
PVP	Polyvinylpyrolydon
ABA	abscisic acid

ABSTRACT

Mervat Hassan Mohamed Malhat. Using Inflorescences for *In-vitro* Propagation of Some Date Palm GenoTypes. Unpublished Ph.D. Thesis, Department of Horticulture, Faculty of Agriculture, Ain Shams University, 2019.

This study was achieved at the Tissue Culture Laboratory of the Agricultural Genetic Engineering Research Institute, Agriculture Research Center, Giza, Egypt during the period from 2013 to 2017, direct embryo initiation and indirect embryoenesis of date palm (*Phoenix dactylifera L.*) cv. Sewi and Barhee was achieved from immature female inflorescences.

Sewi cultivar experiments

The best sterilization treatment was mercuric chloride (mc) at 0.1% for 10 min. Direct embryo initiation of date palm cv. Sewi from immature female inflorescences showed that the highest embryo formation have been achieved on the modified MS medium supplemented with 4 mg l^{-1} Picloram plus 3 mg l^{-1} 2 iP and 2 g l^{-1} PVP. Indirect embryoenesis showed that the highest significant callus formation percentage found with10 mg l^{-1}2, 4-D + 3 mg l^{-1} 2ip. and the highest significant embryo formation percentage was recorded by 10 mg l^{-1} NAA+ 6 mg l^{-1} 2ip . Results also showed that during germination stage BA at 0.5 mg l^{-1} produced the highest number of germinated embryos/culture while, kinetin at 0.25 mg l^{-1} significantly increased the average number of adventitious shoots/culture. NAA at 1.0 mg l^{-1} induced the highest rooting percentage and micro-shoot length. On the other hand, the best survival percentage during the acclimatization stage was observed with plantlets produced from IBA at 0.5 mg l^{-1} during the rooting stage. In this study we compared the mother plant Sewi and Barhee at the molecular level by

using ISSR primers in order to screen the level of varieties the first group from direct embryogenesis of Sewi cultivar comparison between mother plant and nine tissue culture cultivar Sewi, to determine genetic variation using ISSR marker cultivar. Sewi . The second group from indirect embryogenesis of Sewi cultivar: comparison between mother plant and eleven tissue cultured plantlets revealed that the ratio of genetic similarity (polymorphism) of the first group reached 95%, while the genetic similarity ratio of the second group do not exceed 93%

Barhee cultivar experiments:

Inflorescence explants were successfully sterilized by mercuric chloride (mc) at 0.1% for 10 min. concerning direct embryogenesis stage. The highest significant embryo formation was found by AC at 1g l^{-1}+ PVP at 2g l^{-1} with Picloram at 4 mg l^{-1} Regarding the indirect embryogenesis, the highest significant callus formation percentage was found by 10 mg l^{-1} 2, 4-D + 3 mg l^{-1} 2ip + 5 mg l^{-1} NOA+ 5 mg l^{-1} NAA and the highest significant embryo formation percentage found by 30 mg l^{-1} NAA+ 20 mg l^{-1} 2ip., the highest significant embryo number/culture were gained by kinetin at 0.2 mg l^{-1} the highest significant number of shoots /culture was found by 2iP at 0.10 mg /l & kinetin at 0. 50 mg /l .Meanwhile, the highest significant average shoot length was achieved by kinetin at 0.50 mg l^{-1}. The highest significant rooting was recorded by IAA at 1 mg l^{-1}, Acclimatization stage showed that the highest significant survival % was recorded by IAA at 1.0 mg/l. genetic stability from indirect embryogenesis showed the genetic relationships among the mother plant and eight tissue cultured date palm plantlets cultivar Barhee based on ISSR**.** The genetic stability ratio of the third group reached 93%. The low percentage of genetic similarity confirms the genetic stability of mother plant and tissue culture date palm cultivars.

Key words: In vitro propagation, *Phoenix dactylifera L.*, Sewi cv, Barhee cv, Immature Inflorescence, Direct embryogenesis, Indirect embryogenesis , Callus formation, Embryo formation, Genetic Stability.