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

By

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M.Sc. Agric. Sc. (Pomology), Ain Shams University, 2012

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ABSTRACT


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 embryogenesis 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 embryoogenesis showed that the highest significant callus formation percentage found with10 mg l⁻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.
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## CONTENTS

<table>
<thead>
<tr>
<th>LIST OF TABLES</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>LIST OF FIGURES</td>
<td>XII</td>
</tr>
<tr>
<td>LIST OF PLATES</td>
<td>XIII</td>
</tr>
<tr>
<td>LIST OF ABBREVIATIONS</td>
<td>XIV</td>
</tr>
<tr>
<td>INTRODUCTION</td>
<td>1</td>
</tr>
<tr>
<td>REVIEW OF LITERATURE</td>
<td>3</td>
</tr>
<tr>
<td>MATERIALS AND METHODS</td>
<td>25</td>
</tr>
</tbody>
</table>

3.1. The sequence and names of ISSR primers

RESULTS AND DISCUSSION

First part: Sewi cultivar experiment:

4.1 Initiation stage

4.1.1. Sterilization experiment

4.1.2. Effect of clorox and mercuric chloride on *in vitro* total contamination, mortality and survival percentages of date palm cv. Sewi immature female inflorescence explants during initiation stage

4.1.3. Effect of antioxidant types, auxin type and concentrations on browning degree of date palm cv. Sewi female immature inflorescence explants during initiation stage

4.1.4. Effect of antioxidant types, auxin type and concentrations on swelling degree of date palm cv. Sewi immature female inflorescence explants during initiation stage

4.1.5. Effect of antioxidant type, auxin type and concentration on callus formation percentage of date palm cv. Sewi immature female inflorescence explants during initiation stage

4.1.6. Effect of antioxidant types, auxin type and concentrations on embryo formation percentage of date palm cv. Sewi immature female inflorescence explants during initiation stage
4.1.7. Effect of antioxidant types, auxin type and concentrations on root formation percentage of date palm cv. Sewi immature female inflorescence explants during initiation stage

4.1.8. Effect of growth regulators concentration on browning degree, swelling degree, root formation percentage of date palm cv. Sewi immature female inflorescence explants during initiation stage

4.1.9. Effect of growth regulators concentration on callus formation and embryo formation percentages of date palm cv. Sewi immature female inflorescence explants during initiation stage

Embryo germination and shoot differentiation stage

4.1.10. Effect of MS strength on embryo number/culture, number of shoot/culture and root number/culture of date palm cv. Sewi cultured on germination media for 12 weeks

4.1.11. Effect of different cytokinin type, concentration and their interaction on embryo number/culture of date palm cv. Sewi cultured on germination media for 12 weeks

4.1.12. Effect of different cytokinin type, concentrations and their interaction on number of adventitious shoots /culture of date palm cv. Sewi produced from callus cultures on germination media for 12 weeks.

4.1.13. Effect of different cytokinin type, concentrations and their interaction on average shoot length of date palm cv. Sewi cultured on germination media for 12 weeks

4.1.14. Effect of different cytokinin type, concentrations and their interaction on number of roots/shoot of date palm cv. Sewi cultured on germination ion media for 12 weeks

4.1.15. Effect of different cytokinin type, concentrations and their interaction on root length of date palm cv. Sewi cultured on germination media for 12 weeks
**Indirect embryogenesis experiment**

4.1.16. Effect of abscisic acid (ABA), activated charcoal (AC) concentrations and their interaction on callus fresh weight (g) of date palm cv. Sewi callus cultures after 4 weeks during embryogenesis stage

4.1.17. Effect of abscisic acid (ABA) activated charcoal (AC) concentrations and their interaction on average number of embryos of date palm cv. Sewi produced from callus cultures after 4 weeks during embryogenesis stage

4.1.18. Effect of abscisic acid (ABA) activated charcoal (AC) concentrations and their interaction on average number of vitrified embryo of date palm cv. Sewi produced from callus cultures after 4 weeks during embryogenesis stage

4.1.19. Effect of abscisic acid (ABA), activated charcoal (AC), concentrations and their interaction on callus fresh weight (g) of date palm cv. Sewi produced from callus cultures after 8 weeks during embryogenesis stage

4.1.20. Effect of abscisic acid (ABA) activated charcoal (AC) concentrations and their interaction on average number of embryos of date palm cv. Sewi produced from callus cultures after 8 weeks during embryogenesis stage

4.1.21. Effect of abscisic acid (ABA) activated charcoal (AC) concentrations and their interaction on average number of vitrified embryo of date palm cv. Sewi produced from callus cultures after 8 weeks during embryogenesis

4.1.22. Effect of abscisic acid (ABA) activated charcoal (AC) concentrations and their interaction on average number of embryos of date palm cv. Sewi produced from callus cultures after 12 weeks during embryogenesis stage

4.1.23. Effect of abscisic acid (ABA) activated charcoal (AC) concentrations and their interaction on average of shoots length (cm) of date palm cv. Sewi produced from callus cultures after
12 weeks during shoot formation stage

**Rooting stage**

4.1.24. Effect of different auxin types, concentrations and their interaction on rooting percentage of microshoots date palm cv. Sewi during *in-vitro* rooting stage

4.1.25. Effect of different auxin type, concentrations and their interaction on average number of roots /shoot of date palm cv. Sewi microshoots during *in-vitro* rooting stage

4.1.26. Effect of different auxin type, concentrations and their interaction on average root length (cm) of date palm cv. Sewi microshoots during *in-vitro* rooting stage.

4.1.27. Effect of different auxin type, concentrations and their interaction on microshoot length (cm) of date palm cv. Sewi during *in-vitro* rooting stage.

**Acclimatization stage**

4.1.28. Effect of pre acclimatization *in-vitro* rooting tretmentes on plantlets survival percentage of date palm cv. Sewi after three month of acclimatization stage

4.1.29. Effect of pre acclimatization *in-vitro* rooting tretmentes on plantlet length (cm) of date palm cv. Sewi after three months of acclimatization stage

4.1.30. Effect of pre acclimatization *in-vitro* rooting tretmentes on microshoot leaf number of date palm cv. Sewi after three month of acclimatization stage

**Second part : Barhee cultivar experiments:**

4.2 Initiation stage

4.2.1. Sterilization experiment.

4.2.2. Effect of clorox and mercuric chloride on *in-vitro* total contamination, mortality and survival percentages of date palm cv. Barhee immature female inflorescence explants during initiation stage

4.2.3. Effect of antioxidant type, auxin type and concentration on...
**4.2.4.** Effect of antioxidant type, auxin type and concentration on swelling degree of date palm cv. Barhee immature female inflorescence explants during initiation stage.

**4.2.5.** Effect of antioxidant type, auxin type and concentration on callus formation percentage of date palm cv. Barhee immature female inflorescence explants during initiation stage.

**4.2.6.** Effect of antioxidant type, auxin type and concentration on embryo formation percentage of date palm cv. Barhee immature female inflorescence explants during initiation stage.

**4.2.7.** Effect of antioxidant type, auxin type and concentration on root formation percentage of date palm cv. Barhee immature female inflorescence explants during initiation stage.

**Indirect embryogenesis**

**4.2.8.** Effect of some growth regulators combination on browning degree, swelling degree, root formation percentage of date palm cv. Barhee immature female inflorescence explants during initiation stage.

**4.2.9.** Effect of growth regulators combination on callus formation percentage of date palm cv. Barhee immature female inflorescence explants during initiation stage.

**4.2.10.** Effect of Naphthalene acetic acid concentration on callus fresh weight(g), number of initiated embryos and number of vitrified embryos of date palm cv. Barhee callus cultures during callus proliferation stage.

**Embryogenesis stage**

**4.2.11.** Effect of different cytokinin type, concentration and their interaction on embryo number/culture of date palm cv. Barhee on germination media for 12 weeks.

**4.2.12.** Effect of different cytokinin type, concentration and their interaction on vitrified embryos percentage of date palm cv.
Barhee cultured on embryogenesis medium for 12 weeks

**Rooting stage.**

4.2.13. Effect of different auxin types, concentrations and their interaction on rooting percentage of date palm cv. Barhee microshoots during *in-vitro* rooting stage

4.2.14. Effect of different auxin type, concentrations and their interaction on average number of roots of date palm cv. Barhee microshoots during *in vitro* rooting stage

4.2.15. Effect of different auxin type, concentrations and their interaction on average roots length of date palm cv. Barhee microshoots during *in vitro* rooting stage

4.2.16. Effect of different auxin type, concentrations and their interaction on microshoot length (cm) of date palm cv. Barhee during *in vitro* rooting stage

**Acclimatization Stage**

4.2.17. Effect of pre acclimatization *in-vitro* rooting treatments on survival percentage of date palm cv. Barhee plantlet after three months of acclimatization stage

4.2.18. Effect of pre acclimatization *in-vitro* rooting treatments on plantlet length (cm) of date palm cv. Barhee after three month of acclimatization stage

4.2.19. Effect of pre acclimatization *in-vitro* rooting treatments on leaves number/plantlets of date palm cv. Barhee after three month of acclimatization stage

**Genetic Stability**

4.2.20. Total number of amplicons, monomorphic amplicons, polymorphic amplicons and percentage of polymorphism as revealed by ISSSR markers among the Mother plant and nine tissue culture date palm cultivar Sewi.

4.2.21. Genetic similarity matrices among the mother plant and nine tissue culture plantlets of date palm cultivars Sewi as
computed according to dice coefficient from ISSR of Sewi.

4.3.22. Total number of amplicons, monomorphic amplicons, polymorphic amplicons and percentage of polymorphism as revealed by ISSR markers among the Mother plant and eleven tissue culture plantlet of date palm cv. Sewi.

4.3.23. Genetic similarity matrices among the mother plant and eleven tissue culture plantlets of date palm cv. Sewi as computed according to dice coefficient from ISSR of Sewi

4.3.24. Total number of amplicons, monomorphic amplicons, polymorphic amplicons and percentage of polymorphism as revealed by ISSR markers among the Mother plant and eight tissue culture plantlets of date palm cv. Barhee

4.3.25. Genetic similarity matrices among the mother plant and eight tissue culture plantlets of date palm cv. Barhee as computed according to Dice coefficient from ISSRs of Barhee

SUMMARY

REFERENCES

ARABIC SUMMARY