DETERMINATION OF RELATIVE FERTILITY OF MALE DESERT ANIMALS USING MOLECULAR GENETIC TECHNIQUES

By

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ABSTRACT

Heba Mohamed Nour Eldin Saad: Determination of Relative Fertility of Male Desert Animals Using Molecular Genetic Techniques. Unpublished M.Sc. Thesis, Department of Genetics, Faculty of Agriculture, In Shams University, 2017.

Camels are unique animals in many aspects and cannot be compared with other farm animals in their physiological responses and adaptation to arid environments. the Arabian camel is a better provider of food than cattle and sheep, which are severely affected by the heat, scarcity of water and forage. The reproductive efficiency of camels under natural conditions is generally regarded to be low. This is probably due to the relatively short breeding season, a longer prepubertal period. Animal fertility is a measure of reproductive success. Due to the complexity of the fertilization process, a single semen evaluation test is not enough to predict fertility. The development of molecular biology techniques during the past decades created exciting new means for studying livestock genetics and animal breeding. However, genetic studies on camels are scarce. Dromedary populations are genetically differentiated is poorly documented. fluorescent differential display is a rapid, specific, nonradioactive method in which fluorescently differentially labeled anchored oligo(dT) downstream primers are used in the reaction, with subsequent analysis of fluorescently labeled PCR products on an automated sequencer. Complete gene expression profiles, containing multiple mRNA fingerprints are possible by the simultaneous comparison of the multicolored banding patterns of the fluorescently differentially labeled products from several primer combinations. This modification of the differential display technique simplifies the assay and increases the throughput of high sample volumes required for comparative gene expression studies in various clinical applications (FDD) technology offers an unprecedented accuracy, sensitivity, and throughput in comprehensive and quantitative analysis of gene expression. These major improvements will allow

researchers to find differentially expressed genes of interest, both known and novel, quickly and easily. Identification of differentially expressed genes to identify relative fertility genes probably to be .Using a high-throughput fluorescent differential display (FDD) system based on an automated DNA sequences, we analysed global patterns of gene expression for dromedary camel. Initial screening of ~2604 cDNA bands displayed with 72 primer combinations.has revealed 135 fragments showing differential expression patterns, suggesting that ~5% of transcripts are modulated in their expression level. With average of 217 per primer combination; a minimum of 45 (PC4) and a maximum of 431 (PC3) expression bands. Total UmRNA showed changes in gene expression among samples were 111 expression bands, 19 were upregulated (appeared in season and disappeared off season) and 5 were downregulated (appeared off season and disappeared in season). Study was designed to find out the possible correlations between genes and semen characteristics of three dromedary camels using fluorescent differential display. The study aimed to identify expression-related molecular markers for fertility using fluorescently labeled differential display technique (FDD) to detect mRNAs. that are differentially expressed for male dromedary camels in relation to semen quality as an indicator for fertility.

Key words: Dromedary Camels, Semen characteristics, Fluorescent Differential Display

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CONTENTS

	Page
LIST OF TABLES……..	IV
LIST OF FIGURES ……...	V
LIST OF ABBREVIATIONS……	VI
I- INTRODUCTION……...	1
II- REVIEW OF LITERATURE……..	4
2.1. Phenotypic Characterization…….	4
2.1.1. Sexual Maturity……..	4
2.1.2. The Breeding Season …….	5
2.2. Behavioral and semen characteristics disorders in camels……	6
2.3. Reproductive performance in normal dromedary camels……..	7
2.3.1. Semen physical characteristics ……...	8
2.3.1.1. Physical characteristics inspection……...	10
2.4. Genetic diversity……	12
2.5. Molecular markers for male fertility …….	14
2.6. Differential display technique……	14
III- MATERIALS AND METHODS……	17
3.1. Animals and management…….	17
3.2. Experimental design…….	17
3.2.1. Sample collections……..	17
3.2.1.1. Blood sample collections……	17
3.2.1.2. Semen sample collections……	18
3.2.1.2.1. Semen evaluation……..	18
3.2.2. Molecular genetics analysis ……...	19
3.2.2.1. RNA extraction from frozen blood …….	19
3.2.2.2.RNA purification ……..	19
3.2.2.3. Florescent differential display of mRNA ……	20
3.2.2.3.1. Fragment analysis method……	22
RESULTS AND DISCUSSION ……	26
4.1. Fresh semen evaluation……..	26

Page

4.2. Differential display analysis…….. 28

4.2.1 RNA Expression profile……..... 28

4.2.2. Band scoring summary…… 127

4.2.3. UmRNA comparative expression**……...** 128

SUMMARY AND CONCLUSION …….. 132

REFERENCES …… 134

ARABIC SUMMARY ……...

LIST OF TABLES

Table		Page
1.	Determination of the score for wave motion of semen….	19
2.	The amplification conditions…….	21
3.	PC Combination…….	22
4.	Physical semen characteristics of male dromedary camels.	24
5.	Number of Peaks scored for primer combination (PC1), its molecular weight (MW) in base pairs (bp) and rate fluorescence unit, are shown for each of three studied specimens (SM, RL and SH) during the fertility season (In) and off the fertility season (Off)……...	26
6.	Number of Peaks scored for primer combination (PC2), its molecular weight (MW) in base pairs (bp) and rate fluorescence unit, are shown for each of three studied specimens (SM, RL and SH) during the fertility season (In) and off the fertility season (Off)……...	38
7.	Number of Peaks scored for primer combination (PC3), its molecular weight (MW) in base pairs (bp) and rate fluorescence unit, are shown for each of three studied specimens (SM, RL and SH) during the fertility season (In) and off the fertility season (Off)……...	44
8.	Number of Peaks scored for primer combination (PC4), its molecular weight (MW) in base pairs (bp) and rate fluorescence unit, are shown for each of three studied specimens (SM, RL and SH) during the fertility season (In) and off the fertility season (Off)……...	59
9.	Number of Peaks scored for primer combination (PC5), its molecular weight (MW) in base pairs (bp) and rate fluorescence unit, are shown for each of three studied specimens (SM, RL and SH) during the fertility season (In) and off the fertility season (Off)……...	62

Table		Page
10.	Number of Peaks scored for primer combination (PC6), its molecular weight (MW) in base pairs (bp) and rate fluorescence unit, are shown for each of three studied specimens (SM, RL and SH) during the fertility season (In) and off the fertility season (Off)……...	65
11.	Number of Peaks scored for primer combination (PC7), its molecular weight (MW) in base pairs (bp) and rate fluorescence unit, are shown for each of three studied specimens (SM, RL and SH) during the fertility season (In) and off the fertility season (Off)……...	78
12.	Number of Peaks scored for primer combination (PC8), its molecular weight (MW) in base pairs (bp) and rate fluorescence unit, are shown for each of three studied specimens (SM, RL and SH) during the fertility season (In) and off the fertility season (Off)……...	82
13.	Number of Peaks scored for primer combination (PC9), its molecular weight (MW) in base pairs (bp) and rate fluorescence unit, are shown for each of three studied specimens (SM, RL and SH) during the fertility season (In) and off the fertility season (Off)……..	87
14.	Number of Peaks scored for primer combination (PC10), its molecular weight (MW) in base pairs (bp) and rate fluorescence unit, are shown for each of three studied specimens (SM, RL and SH) during the fertility season (In) and off the fertility season (Off)……...	99
15.	Number of Peaks scored for primer combination (PC11), its molecular weight (MW) in base pairs (bp) and rate fluorescence unit, are shown for each of three studied specimens (SM, RL and SH) during the fertility season (In) and off the fertility season (Off)……...	109

Table		Page
16.	Number of Peaks scored for primer combination (PC12), its molecular weight (MW) in base pairs (bp) and rate fluorescence unit, are shown for each of three studied specimens (SM, RL and SH) during the fertility season (In) and off the fertility season (Off)……..	112
17.	Number of total scored fragments, min and max molecular weights, no. of fragments marked as (changes in gene expression, up-regulated and Down-regulated) and total no. of retained fragments……..	125
18.	Heatmap with mini charts of 35 UmRNA that showed changes in gene expression related to fertility over all year	126
19.	Heatmap with spark lines of UmRNA that showed a seasonal expression, whether in-season or off-season in all three animals……	127

LIST OF FIGURES

No.		Page
1.	Illustration of each physical semen characteristics per animal, demonstrated as histograms per samples and trendlines between all three samples……..	24
2.	PC1 visualized chromatogram of differentially displayed cDNA fragments for the three specimens in and off season (F1: SH-In; F2: SM-Off; F3: RL-In; F4: RL-Off; F5: SH-In; F6: SH-Off)…….	25
3.	PC2 visualized chromatogram of differentially displayed cDNA fragments for the three specimens in and off season (F1: SH-In; F2: SM-Off; F3: RL-In; F4: RL-Off; F5: SH-In; F6: SH-Off)…….	37
4.	PC3 visualized chromatogram of differentially displayed cDNA fragments for the three specimens in and off season (F1: SH-In; F2: SM-Off; F3: RL-In; F4: RL-Off; F5: SH-In; F6: SH-Off)…….	43
5.	PC4 visualized chromatogram of differentially displayed cDNA fragments for the three specimens in and off season (F7: SH-In; F8: SM-Off; F9: RL-In; F10: RL-Off; F11: SH-In; F12: SH-Off)……..	58
6.	PC5 visualized chromatogram of differentially displayed cDNA fragments for the three specimens in and off season (F7: SH-In; F8: SM-Off; F9: RL-In; F10: RL-Off; F11: SH-In; F12: SH-Off)……..	61
7.	PC6 visualized chromatogram of differentially displayed cDNA fragments for the three specimens in and off season (F7: SH-In; F8: SM-Off; F9: RL-In; F10: RL-Off; F11: SH-In; F12: SH-Off)……..	64

No. **Page**

8. PC7 visualized chromatogram of differentially displayed cDNA fragments for the three specimens in and off season (G1: SH-In; G2: SM-Off; G3: RL-In; G4: RL-Off; G5: SH-In; G6: SH-Off)……... 77

9. PC8 visualized chromatogram of differentially displayed cDNA fragments for the three specimens in and off season (G1: SH-In; G2: SM-Off; G3: RL-In; G4: RL-Off; G5: SH-In; G6: SH-Off)……... 81

10. PC9 visualized chromatogram of differentially displayed cDNA fragments for the three specimens in and off season (G1: SH-In; G2: SM-Off; G3: RL-In; G4: RL-Off; G5: SH-In; G6: SH-Off)……... 86

11. PC10 visualized chromatogram of differentially displayed cDNA fragments for the three specimens in and off season (G7: SH-In; G2: SM-Off; G3: RL-In; G4: RL-Off; G5: SH-In; G6: SH-Off) 98

12. PC11 visualized chromatogram of differentially displayed cDNA fragments for the three specimens in and off season (G7: SH-In; G2: SM-Off; G3: RL-In; G4: RL-Off; G5: SH-In; G6: SH-Off)……... 108

13. PC12 visualized chromatogram of differentially displayed cDNA fragments for the three specimens in and off season (G7: SH-In; G2: SM-Off; G3: RL-In; G4: RL-Off; G5: SH-In; G6: SH-Off)……... 111

LIST OF ABBREVIATIONS

Abbreviations	:	Meaning
LH:	:	Luteinizing Hormone
FSH:	:	Follicle-Stimulating Hormone
SM:	:	Animal No.1
RL:	:	Animal No.2
SH:	:	Animal No.3
GnRH:	:	Gonadotropin-releasing hormone
AV:	:	Artificial Vagina
PC:	:	Primer Combination
MtDNA	:	Mitochondrial DNA