

دراسات جينومية مقارنة لبعض أسماك المياه العذبة

رسالة مقدمة من

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للحصول على

**درجة دكتور فلسفه في العلوم الزراعية
(وراثة)**

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COMPARATIVE GENOMIC STUDIES OF SOME FRESH-WATER FISH

BY

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ABSTRACT

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Eleven RAPD, 12 ISSR and ten microsatellite primers (SSR) were used to characterize four tilapia species: *Oreochromis niloticus*, *Oreochromis aureus*, *Sarotherodon galilaeus* and *Tilapia zillii*. The number of loci through RAPD primers ranged from 11 to four loci. Using RAPD primers, 26 of 180 generated loci were detected as molecular markers for the tilapia species. The number of loci through the ISSR primers ranged from ten to three loci. Using ISSR primers, 31 of 139 generated loci were detected as molecular markers for the tilapia species. There are no differences between the similarity values revealed by *NTSYSpc2.01b* and *SPSS10* software, but *SPSS10* software draws the phylogenetic tree on the whole scale of the program whether the relationships between the individuals covering the scale or not. Number of alleles through SSR (microsatellite) loci ranged from seven to zero alleles. All SSR loci were polymorphic in the four tilapia species except one locus in *S. galilaeus* and three loci in *T. Zillii*. The four tilapia species showed high ratio of heterozygosity. Most of SSR loci showed that the observed heterozygosity was higher than their expected heterozygosity. Due to the high polymorphic nature of the microsatellite loci the values of similarity between and within the four studied tilapia species were small.

Key words:

O. niloticus, *O. aureus*, *S. galilaeus*, *T. zillii*, RAPD, ISSR, SSR, molecular markers and phylogenetic relationships.

Dedication

To my wife and my daughter

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CONTENTS

Title	Page
I. Introduction	1
II. Review of Literature	3
1. Molecular characterization	3
1.1. Molecular characterization using dominant markers	3
1.1.1. Molecular characterization using RAPD analysis	3
1.1.2. Molecular characterization using ISSR analysis	12
1.2. Molecular characterization using microsatellites as a co-dominant marker	15
III. Materials and Methods	24
1. Materials	24
2. Methods	24
2.1. DNA Extraction	24
2.1.1. Stock solutions	24
2.1.1.1. Cell lysis buffer, pH 8.0	24
2.1.1.2. Ammonium acetate (7.5 M)	25
2.1.2. Extraction steps	25
2.2. PCR-based analyses	25
2.2.1. Randomly Amplified Polymorphic DNA (RAPD)	25
2.2.1.1. RAPD-PCR reaction mixture	26
2.2.1.2. RAPD-PCR program	26
2.2.2. Inter Simple Sequence Repeats (ISSRs)	26
2.2.2.1. ISSR-PCR reaction mixture	27
2.2.2.2. ISSR-PCR program	27
2.2.3. Simple Sequence Repeats (SSRs)	28
2.2.3.1. SSR-PCR reaction mixture	29
2.2.3.2. SSR-PCR program	29

2.2.4. Electrophoresis of PCR products	29
2.2.4.1. Electrophoresis of PCR products of the dominant markers (RAPD and ISSRs) using agarose gel electrophoresis	29
2.2.4.1.1. TBE buffer (5 X), pH 8.0	29
2.2.4.1.2. Agarose gel preparation	29
2.2.4.1.3. Separation on agarose	30
2.2.4.2. Electrophoresis of PCR products of the co-dominant marker SSRs using polyacrylamide gel electrophoresis	30
2.2.4.2.1. Stock solutions	30
2.2.4.2.1.1. TBE buffer (1 X), pH 8.0	30
2.2.4.2.1.2. Ethidium bromide (1%)	30
2.2.4.2.2. Polyacrylamide gel preparation	30
2.2.4.2.3. Separation on the 10% polyacrylamide	31
2.2.5. Analysis of gel images and data	31
2.2.5.1. Analysis of gel images	31
2.2.5.2. Population genetic analysis	31
2.2.5.3. Phylogenetic relationships analysis	31
IV. Results and Discussion	33
1. Molecular characterization for the four tilapia species	
1.1. Molecular characterization using Randomly Amplified Polymorphic DNA (RAPD)	33
1.1.1. Detecting molecular markers for the tilapia species using RAPD analysis	52
1.1.2. Detecting the phylogenetic relationships for the tilapia species using RAPD analysis	53
1.1.2.1. Detecting the phylogenetic relationships between tilapia species using RAPD analysis	53
1.1.2.2. Detecting the similarity relationships within the tilapia species using RAPD analysis	57
1.2. Molecular characterization using Inter Simple Sequence Repeats (ISSRs)	58

III

1.2.1. Detecting molecular markers for the tilapia species using ISSR analysis	78
1.2.2. Detecting the phylogenetic relationships for the tilapia species using ISSR analysis	80
1.2.2.1. Detecting the phylogenetic relationships between tilapia species using ISSR analysis	80
1.2.2.2. Detecting the similarity relationships within the tilapia species using ISSR analysis	83
1.3. Molecular characterization using Simple Sequence Repeats (SSRs)	84
1.3.1. Genetic diversity parameters	100
1.3.1.1. Polymorphism percentage	100
1.3.1.2. Observed and expected heterozygosity	101
1.3.2. Detecting the phylogenetic relationships for the tilapia species using microsatellites analysis	103
1.3.2.1. Detecting the phylogenetic relationships between tilapia species using microsatellites analysis	103
1.3.2.2. Detecting the similarity relationships within the tilapia species using microsatellites analysis	105
1.4. Detecting the phylogenetic relationships for the tilapia species using combined analysis	105
1.4.1. Detecting the phylogenetic relationships between tilapia species using combined analysis	105
1.4.2. Detecting the similarity relationships within the tilapia species using combined analysis	106
V. Summary	107
VI. References	109
Arabic Summary	

LIST OF TABLES

Table	Page
Table 1. RAPD primer names and sequences	26
Table 2. ISSR primer names and sequences	27
Table 3. SSR primer names and sequences	28
Table 4. A01 RAPD primer data of the four tilapia species.	31
Table 5. A06 RAPD primer data of the four tilapia species.	35
Table 6. A14 RAPD primer data of the four tilapia species.	37
Table 7. A16 RAPD primer data of the four tilapia species.	38
Table 8. A17 RAPD primer data of the four tilapia species.	39
Table 9. A20 RAPD primer data of the four tilapia species.	41
Table 10. B03 RAPD primer data of the four tilapia species.	42
Table 11. B12 RAPD primer data of the four tilapia species.	43
Table 12. C09 RAPD primer data of the four tilapia species.	45
Table 13. C11 RAPD primer data of the four tilapia species.	46
Table 14. C13 RAPD primer data of the four tilapia species.	47
Table 15. The total number of the generated fragments per RAPD primers.	48
Table 16. Number of loci which generated per RAPD primers.	49
Table 17. Generated polymorphism by the RAPD primers.	50
Table 18. Average of band frequency for the 11 RAPD primers.	51
Table 19. Molecular sizes (bp) of the scored RAPD unique markers for the four studied tilapia species.	53
Table 20. Similarity values among the studied tilapia species based on the 11 RAPD markers via the three similarity coefficients.	54
Table 21. Similarity mean and standard error (Se) values within the studied tilapia species based on the 11 RAPD markers via the three similarity coefficients.	58
Table 22. ISSR primer 814A data of the four tilapia species.	59

Table 23. ISSR primer 844A data of the four tilapia species.	61
Table 24. ISSR primer 844B data of the four tilapia species.	62
Table 25. ISSR primer 17898A data of the four tilapia species.	63
Table 26. ISSR primer 17898B data of the four tilapia species.	65
Table 27. ISSR primer 17899A data of the four tilapia species.	66
Table 28. ISSR primer HB10 data of the four tilapia species.	67
Table 29. ISSR primer HB11 data of the four tilapia species.	69
Table 30. ISSR primer HB12 data of the four tilapia species.	70
Table 31. ISSR primer HB13 data of the four tilapia species.	71
Table 32. ISSR primer HB14 data of the four tilapia species.	73
Table 33. ISSR primer HB15 data of the four tilapia species.	74
Table 34. The total number of the generated fragments per ISSR primers.	75
Table 35. Number of loci which generated per ISSR primers.	76
Table 36. The generated polymorphism by the ISSR primers.	77
Table 37. Average of band frequency for the 12 ISSR primers.	78
Table 38. Molecular sizes (bp) of the scored ISSR unique markers for the four studied tilapia species.	79
Table 39. Similarity values among the studied tilapia species based on the 12 ISSR markers via the three similarity coefficients.	81
Table 40. Similarity mean and standard error (Se) values within the studied tilapia species based on the 12 ISSR markers via the three similarity coefficients.	84
Table 41. GM211 SSR primer data of the four tilapia species.	86
Table 42. GM531 SSR primer data of the four tilapia species.	87
Table 43. GM538 SSR primer data of the four tilapia species.	89
Table 44. UNH104 SSR primer data of the four tilapia species.	90
Table 45. UNH106 SSR primer data of the four tilapia species.	92

Table 46. UNH123 SSR primer data of the four tilapia species.	93
Table 47. UNH146 SSR primer data of the four tilapia species.	95
Table 48. UNH185 SSR primer data of the four tilapia species.	96
Table 49. UNH207 SSR primer data of the four tilapia species.	97
Table 50. UNH995 SSR primer data of the four tilapia species.	99
Table 51. Observed (H_o) and expected (H_e) heterozygosity for the four tilapia species across the ten microsatellite loci.	102
Table 52. Similarity values among the studied tilapia species based on the ten microsatellite loci.	104
Table 53. Similarity values among the studied tilapia species based on the combined data.	105