



141 148 /1387 /1 18 /

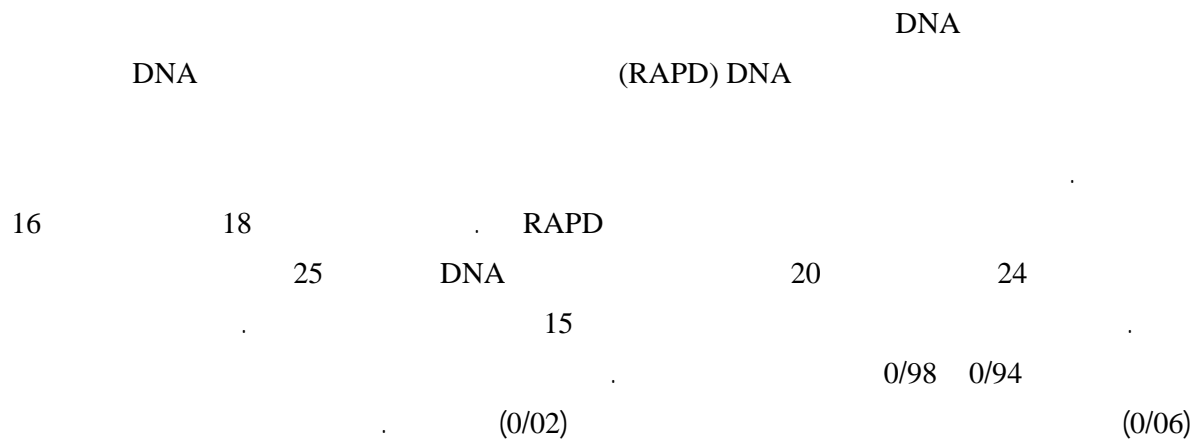
RAPD

4 3 2 1 *1

86/7/14 :

-1
2
3
-4
*

E-mail : Gh.Elyasi@Gmail.com



RAPD-PCR

RAPD DNA :

Study of Turkey Genetic Diversity Using RAPD Markers

G Elyasi^{1*}, A Ayazi¹, O Pirahary², MR Nassiry³ and A Dehnad⁴

¹East Azarbaijan Research Center for Agriculture and Natural Resources, Tabriz, Iran

²East Azarbaijan Jihad-e-Keshavarzi Organization, Tabriz, Iran

³Agriculture Faculty of Ferdowsi University, Mashhad, Iran

⁴North-West and West Agricultural Biotechnology Research Institute, Tabriz, Iran

*Corresponding author: E-mail:Elyasi@azaran.org.ir

Abstract

Application of DNA marker technology in poultry as a tool for species and strain identification has progressed rapidly during the last decade. Random amplified polymorphic DNA (RAPD) markers can be generated using short arbitrary primers to amplify genomic DNA, giving a genotype-specific pattern of bands. RAPD analysis should lead to the saturation of the genome without the requirement of previous genetic information. The purpose of this study was to evaluate genetic similarities and distances among four-colored phenotype of turkey population that kept in Turkey Research Station of Iran using RAPD technique. Blood samples were taken from 20 Black, 16 Golden, 24 Pied and 18 White local turkeys. Genomic DNA was extracted from 25µl blood samples. RAPD technique, using 15 primers, was applied to amplification of different fragments of genome. The genetic similarity between the groups varied from 0.94 to 0.98 between phenotypic groups. The highest genetic distance (0.06) was determined between the White and Golden phenotypic groups and the lowest genetic distance (0.02) was obtained between White and Black groups. The results of this research showed that RAPD-PCR is an appropriate tool for evaluation of genetic variation in poultry and color is not a useful character to differentiate turkey genetic groups.

Key Words: DNA marker, Genetic distance, RAPD, Turkey

(2002)

(1996)

DNA

12

(r=0/8)

)

(1996

DNA

DNA

(1998)

(2003)

(2001)

¹PCR

²RAPD

PCR

DNA

²Random Amplified Polymorphic DNA

¹Polymerase Chain Reaction

/1	18	/	...	144
				1387

	DNA			(1998)
DNA	DNA		RAPD	70 5
		DNA		
			10	
	(1)		15	
1/5)	25			RAPD
20 dNTP		0/2 MgCl ₂		4 4
<i>Taq</i> DNA		1		RAPD
50		1 Polymerase		
PCR		(DNA		
3	94			
		40		
	37	45	94	
	2	72	1	RAPD
10	72			
	70	6	%2	RAPD
			16	18
			20	24
	Popgene 3.2		EDTA	%10
(1973)	Nei		25 DNA	20
			(1995)	(1990)

1

5'→3'

1	Moh 01	TGGACTCGAG
2	Moh 02	GCACTGAGTA
3	Moh 04	GCATGCGATC
4	Moh 06	ACGTCGAGCA
5	Moh 07	TACGCAGACT
6	Moh 11	TGCATCGTAC
7	Moh 12	ACGCCGTACG
8	Moh 13	GCTGCTCGAGT
9	Moh 26	CGAACCTGATC
10	Moh 27	GCTTGCAGATC
11	OPC 02	GTGAGGCGTC
12	OPC 05	GATGACCGCC
13	OPC 08	TGGACCGGTG
14	OPC 16	CACACTCCAG
15	OPD 05	TGAGCGGACA

DNA

DNA

RAPD

.(2 1)

5

(2)

)

14 OPC-05

RAPD

.(2000

.(3 3)

(2005)

(2001)

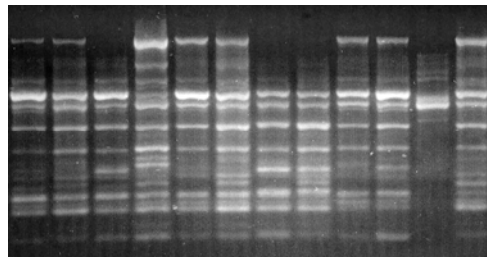
2

5'→3'

/1	18	/	...	146
				1387
9	12	GTGAGGCGTC	OPC 02	
14	18	GATGACCGCC	OPC 05	
9	12	TGGACCGGTG	OPC 08	
10	11	CACACTCCAG	OPC 16	
11	14	TGAGCGGACA	OPD 05	

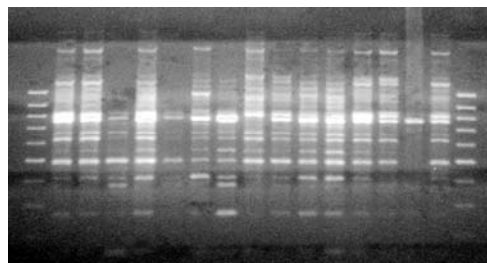
RAPD-PCR

RAPD



OPC-02

1



OPC-05

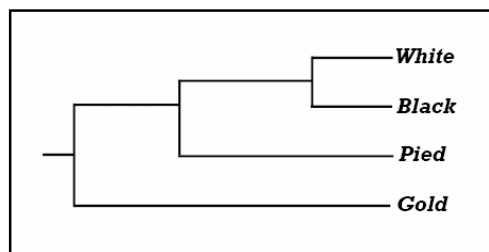
2

(1973)

3

0/96	0/97	0/98	
-------------	-------------	-------------	--

0/95	0/94	---
0/97	---	---



(1973)

3

References

- Ali BA and Ahmed MMM, 2001. Random amplified polymorphic DNA in some chicken strains. Proceeding of the Congress of Role of Biochemistry in Environment and Agriculture. Part I, p. 23-31. 6th–8th February, Cairo Univ., Cairo, Egypt.
- Ali BA, Ahmed MMM and Aly OM, 2003. Relationship between genetic similarity and some productive traits in local chicken strains. *Afr J Biotechnol* 2:46-47.
- Appa Rao KBC, Bhat KV and Totey SM, 1996. Detection of species - specific genetic markers in farm animals through random amplified polymorphic DNA (RAPD) Genetic Analysis. *Biomolecular Engineering* 13: 135 - 138.
- Boom R, Sol CJA, Salimans MMM, Jansen CL, Wertheim-Van Dillen PME and Van Der Noordaa J, 1990. Rapid and simple method for purification of nucleic acids. *Journal of Clinical Microbiology* 28: 495-503.
- Feral JP, 2002. How useful is the genetic markers in attempts to understand and manage marine biodiversity. *J Exp Mar Biol Ecol* 268: 121-145.
- Nei M, 1973. Analysis of gene diversity in subdivided populations. *Proc Natl Acad Sci USA* 70: 3321 – 3323.
- Ponsuksili S, Wimmers K and Horstr P, 1996. Comparison of microsatellite and oligonucleotide DNA fingerprinting analyses to study genetics variability. Proceedings of the XX World`s Poultry Congress, New Dehli, India, Vol IV: 7.
- Salem HH, Ali BA, Huang TH and Qin DN, 2005. Use of randomly amplified polymorphic DNA (RAPD) markers in poultry research. *International Journal of Poultry Science* 4: 804-811.
- Shaikhayev GO, 1995. Extraction of DNA from the whole blood by silica gel. *Inc Gene Biology*. Moscow.
- Sharma D, Appa KB, RV Rao Singh and Totey SM, 2001. Genetic diversity among

chicken breeds estimated through randomly amplified polymorphic DNA. *Anim Biotechnol* 12: 111-120.

Takahashi H, Nirasawa K, Nagamine Y, Tsudzuki M and Yamamoto Y, 1998. Genetic relationships among Japanese native breeds of chicken based on microsatellite DNA polymorphisms *J Hered* 89: 543-546.

Xena de Enrech N, 2000. A decade of the RAPD method: possibilities and limitations for plant genetics relationship studies. *Acta Cient. Venez* 51: 197-206.

Xi-Guan, Z, Xue-Mei L, Jing-Shun L, Guan-Fu Y and Xian-Hua W, 1998. Population genetic variability of microsatellite polymorphisms and RAPDs in Chinese chicken breeds in Guangdong. *Chinese Journal of Genetics* 25: 91-97.