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SHORT COMMUNICATION

M. Aoyama · T. Matsuki · K. Kishi · R. Iida
E. Tsubota

DYS19 marker in Japanese populations

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Abstract Allele frequencies of the Y chromosome-specific short tandem repeat system DYS19 (Y-27H39) were determined from blood samples obtained from 251 unrelated Japanese in Fukui and Gunma Prefectures. Five alleles that contained 10, 11, 12, 13 and 14 repeats of GATA were detected. Allele frequency distributions in Japanese populations were different from those in other Asian and Caucasian populations.

Key words DYS19 · Japanese · Population study · Short tandem repeats (STR)

Introduction

Several investigations have dealt with the distribution of autosomal short tandem repeat systems in Japanese populations and considerable differences have been found (Meyer et al. 1995; Nagai et al. 1996). The DYS19 polymorphism (Arnemann et al. 1986; Roewer et al. 1992) was examined in two Japanese populations to evaluate its forensic utility.

Materials and methods

DNA samples were extracted from blood buffy coats or saliva from male volunteers living in Fukui (n = 131) and Gunma (n = 120) Prefectures by the Chelex method (Hochmeister et al. 1991). Of the 131 volunteers in Fukui, 65 provided both blood and saliva samples.

PCR, electrophoresis and direct DNA sequencing were carried out according to the previous methods (Santos et al. 1993; Matsuki et al. 1994; Iida et al. 1996). The allele frequencies were compared to those in other populations using the χ^2-test.

M. Aoyama · T. Matsuki (✉) · R. Iida · E. Tsubota
Department of Legal Medicine, Fukui Medical School,
Matsuoka-cho, Fukui 910-11, Japan
FAX: +81 (776) 618 108
e-mail: tmatsuki@fmsrsa.fukui-med.ac.jp

K. Kishi
Department of Legal Medicine,
Gunma University School of Medicine, Maebashi-shi,
Gunma 371, Japan

Results and discussion

Five alleles were identified in our blood and saliva samples. The DNA sequence of allele A was: 5′-primer (21 bp)-57 bp-$(GATA)_3$-GGTA-$(\underline{GATA})_{10}$-33 bp-primer (19 bp)-3′, a total of 186 bp. Alleles B, C, D and E had 11, 12, 13 and 14 repeats of GATA (underlined), respectively. The DNA sequence of each allele agreed with that reported previously (Malaspina et al. 1994).

The allele distributions of DYS19 among two Japanese populations were not different, however, those in each Japanese population were significantly different from those in Taiwanese (Lin et al. 1995) and German (Müller et al. 1994) populations ($P < 0.001$) (Table 1).

There was complete agreement among the genotyping results from blood and saliva samples derived from the same 65 individuals (data not shown).

Though limited to male samples, DYS19 may be a useful marker for routine forensic practice such as identification and paternity testing.

Table 1 Allele frequency distribution of DYS19

Allele	Japanese[a] (Fukui)	Japanese[a] (Gunma)	Taiwanese[b]	German[c]
A:186bp	0.053	0.033	0	0.075
B:190	0.076	0.075	0.075	0.491
C:194	0.405	0.542	0.358	0.226
D:198	0.229	0.250	0.547	0.132
E:202	0.237	0.100	0.019	0.075
n	131	120	53	53
PD	0.72	0.63	0.57	0.68
P_1	–	0.07	< 0.001	< 0.001
P_2	0.07	–	< 0.001	< 0.001

[a] Present study, [b] Lin et al. (1995), [c] Müller et al. (1994), n: number of individuals, PD: Probability of discrimination, P_1: p-values to Japanese population (Fukui), P_2: p-values to Japanese population (Gunma)

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