DISTRIBUTION OF Gm AND Inv FACTORS IN TWO SAMPLES OF THE GREEK POPULATION

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Gm and Inv polymorphism has been investigated on a sample of the general Greek population ($N = 256$) and on a sample of the Achaia population of Northwestern Peloponnesus ($N = 150$). The estimated frequencies were, respectively in the two groups: Gm^1, 0.156 vs. 0.180; $Gm^{1,2}$, 0.010 vs. 0.017; $Gm^{4,12}$, 0.834 vs. 0.803; Inv (+1), 0.125 vs. 0.140.

Several studies have been concerned with the distribution of Gm(1), Gm(2), Gm(5) or Gm(12), Inv(1) phenotypes (numerical nomenclature according to WHO 1965) and the Gm^1, $Gm^{1,2}$, Gm^{12} haplotype frequencies in the Greek population (Podliachouk and Eyquem 1963, Ritter et al. 1966, Walter and Yannissis 1967, Fraser et al. 1969*b*). However, the results of these studies are not in good agreement with each other. The purpose of the present study was to determine the distribution of one more Gm factor, Gm(4), and to reexamine the result of previous investigations in the light of two new samples of the Greek population.

Two samples of unrelated, apparently healthy subjects, respectively representative of the general Greek population (N = 256) and of the province of Achaia on Northwestern Peloponnesus (N = 150), underwent Gm(1), Gm(2), Gm(4), Gm(12), and Inv(1) determination. Sera were separated by centrifugation and stored at — 20° C until used. Gm and Inv typing was performed by the hemagglutination inhibition test on Kline's tiles with specific Behringwerke antisera.
Six individuals were excluded from the Gm haplotype frequency calculations, two phenotypically Gm(1,4) and four Gm(1,12), because their phenotypes were not in accordance with the accepted 3 haplotypes found in Europeans (Grubb 1970).

The resulting distributions within the two samples are in agreement with the Hardy-Weinberg equilibrium (Table 1) and do not appear to differ one from the other, so that the pooled data may be used for comparisons (Tables 2 and 3).

The distribution of Gm haplotypes is in agreement with most of the previous Greek studies, but significantly differs from French, Bulgarian, Italian, and Yugoslavian populations. In these comparisons we have considered Gm^{12} and $Gm^{4,12}$ equal and exchangeable when necessary. It should be noted that the distribution reported by Walter and Yannissis (1967) for the general population of Greece and by Fraser et al. (1969*b*) for the province of Arta, Greece, appear questionable, because they are not in agreement with the Hardy-Weinberg equilibrium.

The rare phenotypes Gm(1,4) and Gm(1,12) displayed by six individuals in our samples have been found in other European populations and at similar frequencies (Ropartz et al. 1966, Wiebecke et al. 1968).

The Inv(1) distribution is similar to those previously reported for Greece by Ritter et al. (1966) and Walter and Yannissis (1967), for Yugoslavia by Fraser et al. (1969*a*), and for Bulgaria by Walter et al. (1972). The frequency of Inv(+1) is however significantly higher than in the province of Arta (Fraser et al. 1969*b*) and in Italy (Ritter et al. 1966).

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Table 1. *Distribution of Gm and Inv Factors in Two Samples of the Greek Population*

	Greece			Achaia		
	Observed frequencies		Expected frequencies	Observed frequencies		Expected frequencies
Gm phenotypes						
1,4,12	66	(0.26)	65	43	(0.289)	42.483
4,12	173	(0.681)	173.9	95	(0.638)	94.800
1,2,4,12	5	(0.02)	4.175	3	(0.02)	3.970
1,2	0		0.78	2	(0.013)	0.896
1	6	(0.024)	6.08	4	(0.027)	4.76
1,4	2	(0.008)	—	—		—
1,12	2	(0.008)	—	2	(0.013)	—
Total	254		249.935	149		146.9097
Inv Phenotypes						
+1	32	(0.125)		21	(0.14)	
−1	224	(0.875)		129	(0.86)	
Total	256			150		
Haplotypes						
Gm^{1}		(0.156)			(0.180)	
$Gm^{1,2}$		(0.010)			(0.017)	
$Gm^{4,12}$		(0.834)			(0.803)	
Conformity with Hardy-Weinberg equilibrium	$\chi^2 = 0.021$, 1 *DF*, $P > 0.8$			$\chi^2 = 0.131$, 1 *DF*, $P > 0.7$		

Table 2. *Gm Haplotype Frequencies in the Greek and Neighboring Populations*

Population	Gm^{1}		$Gm^{4,12}$		$Gm^{1,2}$		Sample size		χ^2 (2 *DF*)
Greek (Present study)	0.156	0.165	0.834	0.822	0.010	0.013	250	397	1.612
Achaia	0.180		0.803		0.017		147		
Greek (Walter and Yannissis 1967)	0.1555		0.743		0.1015		218		49.118***
Greek (Podliachouck and Eyquem 1963)	0.1794		0.7995		0.0211		504		2.585
Greek (Ropartz et al. 1963)	0.1632		0.8198		0.017		297		0.468
Greek, Arta territory[a] (Fraser et al. 1969*b*)	0.198		0.788		0.014		653		3.740
French (Ropartz et al. 1966)	0.226		0.697		0.076		203		43.031***
Italian, Bari (Ropartz et al. 1966)	0.216		0.751		0.031		143		8.747**
Yugoslavian (Fraser et al. 1969*a*)	0.151		0.817		0.032		505		7.5**
Bulgarian (Walter et al. 1972)	0.116		0.847		0.037		138		9.534**

[a] Haplotype frequencies are calculated considering 16 Gm (1,5,6) individuals, as Gm (1,5).

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Table 3. *Inv(1) Factor Frequency in the Greek and Neighboring Populations*

Population	Inv(+1)		Inv(—1)		Sample size		χ^2 (1*DF*)
Achaia	0.14	0.1305	0.86	0.8695	150	406	0.079
Greek (Present study)	0.125		0.875		256		
Greek (Ritter et al. 1966)	0.1723		0.8277		296		2.045
Arta Territory (Fraser et al. 1969*b*)	0.257		0.743		661		23.641***
Greek (Walter and Yannissis 1967)	0.146		0.854		218		0.195
Italian (Ritter et al. 1966)	0.2066		0.7934		421		7.98**
Yugoslavian (Fraser et al. 1969*a*)	0.107		0.893		505		0.993
Bulgarian (Walter et al. 1972)	0.13		0.87		138		0.02

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