

Comparative Typing of Orosomucoid Variants and Proposal for a New Nomenclature

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INTRODUCTION

There are two forms of orosomucoid (ORM) in the sera of most individuals. The ORM1 and ORM2 phenotypes are encoded by two separate but closely linked loci on the long arm of chromosome 9. Duplications and non-expressions are observed in some populations. The ORM system is very complicated and its nomenclature is very confusing. This paper presents a proposal for a new nomenclature of all ORM variants found in different populations hitherto.

MATERIALS AND METHODS

Serum and plasma samples were desialylated with 4-fold volumes of neuraminidase (1U/ml, Sigma, pH 5.5) overnight at room temperature.

ORM phenotypes were classified by three different techniques of isoelectric focusing (IEF) using horizontal flat-bed polyacrylamide gels containing additives such as Triton X-100 and/or glycerol (Yuasa et al. 1987, 1888, 1990).

ORM bands obtained by immunoprinting were assigned to either ORM1 or ORM2 locus according to visual difference in their intensity. ORM1 bands are more intense than ORM2 bands.

RESULTS AND DISCUSSION

In honor of the first genetic study by Johnson et al. (1969), we maintain the notations ORM1*F and ORM1*S for the two common alleles at ORM1 locus. The ORM1*F is divided into two common subtype alleles, ORM1*F1 and ORM1*F2. For the common allele at ORM2 locus, the designation of ORM2*M is recommended.

As shown in Table 1, ORM variants were classified into 49

different variants. The new nomenclature was designated alphanumerically on the basis of relative mobilities observed by IEF in the presence of Triton X-100 and glycerol (Yuasa et al. 1987).

The ORM system is expressed by a total of 57 different ORM alleles including duplicated and non-expressed alleles at the two highly polymorphic loci. Escallon et al. (1987) described a few variants at ORM2 locus in American Blacks. Unfortunately, the serum samples were not available. It is probable that a number of new additional variants are disclosed, particularly by studying of populations other than Europeans and East Asians.

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Table 1. List of compared ORM variants and proposal for new nomenclature

ORM1		ORM2		References	
New nomenclature	Old nomenclature: Geographic or ethnic origin of samples	New nomenclature	Old nomenclature: Geographic or ethnic origin of samples	References	References
# ORM1*A4	ORM1*7	# ORM2*I9	ORM2*I4	Yuasa et al., 1988	Yuasa et al., 1990b
# -	ORM1*A2	ORM2*I8	ORM2*21	Umetsu et al., 1988	Umetsu et al., 1989
ORM1*A3	ORM1*A1	ORM2*I7	ORM2*4	Weidinger (unpublished)	Yuasa et al., 1987
# -	ORM1*18	# ORM2*I6	ORM2*ThS	Weidinger (unpublished)	Weidinger (unpublished)
ORM1*A2	ORM1*16	# ORM2*I5	ORM2*2	Yuasa (unpublished)	Yuasa et al., 1987
ORM1*A1	ORM1*10	ORM2*I4	ORM2*22	Umetsu et al., 1989	Umetsu et al., 1989
		ORM2*I3	ORM2*20	Yuasa (unpublished)	Umetsu (unpublished)

ORM1*F2	ORM1*F3	French,	Yuasa et al., 1986	ORM2*H2	ORM2*H13	German	Umetsu et al., 1989
#	ORM1*F2	Nepalese	Weidinger et al., 1987	ORM2*H1	ORM2*H8	Taiwanese	Umetsu et al., 1988
#	ORM1*F1	German	Umetsu et al., 1985	#	ORM2*H1	French,	Yuasa et al., 1986
#	ORM1*F1	Japanese	Weidinger et al., 1987	#	ORM2*H1	Nepalese	Weidinger et al., 1987
ORM1*B1	ORM1*F12	German	Yuasa (unpublished)	#	ORM2*H2	German	Yuasa et al., 1990a
ORM1*B2	ORM1*F4	New Zealander	Eap et al., 1988 and 1989	#	ORM2*H2	Japanese	Yuasa et al., 1987
ORM1*B3	ORM1*F8	Swiss	Umetsu et al., 1988	#	ORM2*H3	Japanese	Tsuge et al., 1987
#	ORM1*F8	Japanese,		#	ORM2*DR	German	Weidinger (unpublished)
#	ORM1*F4	Taiwanese		#	ORM2*H10	Japanese	Umetsu et al., 1988
#	ORM1*F4	Japanese	Yuasa et al., 1987	#	ORM2*AD	French	Duche (unpublished)
ORM1*B4	ORM1*V1	Japanese	Tsuge et al., 1987	#	ORM2*H4	French	Yuasa (unpublished)
#	ORM1*V1	Swiss	Yuasa (unpublished)	#	ORM2*H5	French	Eap (unpublished)
ORM1*B5	ORM1*H1	New Zealander	Weidinger (unpublished)	#	ORM2*H6	Swiss	Japanese
ORM1*B6	ORM1*H7	Chinese	Eap et al., 1988	#	ORM2*H7	Japanese	Japanese
ORM1*B7	ORM1*H7	German	Weidinger (unpublished)	#	ORM2*H8	Japanese	Fukuma et al., 1990
ORM1*B8	ORM1*H3	Swiss	Weidinger (unpublished)	#	ORM2*H9	French	Yuasa (unpublished)
#	ORM1*H3	German	Yuasa et al., 1989	#	ORM2*H10	Japanese	Yuasa et al., 1990b
ORM1*B9	ORM1*H4	Japanese	Umetsu et al., 1985	#	ORM2*H11	German	Weidinger et al., 1987
ORM1*B10	ORM1*H5	German	Weidinger et al., 1987	#	ORM2*H12	German	Weidinger (unpublished)
#	ORM1*H5	Japanese	Weidinger (unpublished)	#	ORM2*H13	Japanese	Fukuma et al., 1990
ORM1*S	ORM1*H2	German	Weidinger (unpublished)	#	ORM2*H14	Japanese	Yuasa et al., 1990
#	ORM1*H2	German	Weidinger (unpublished)	#	ORM2*H15	Lebanese	Duche (unpublished)
ORM1*C1	ORM1*VU	German	Yuasa (unpublished)	#	ORM2*H16	Japanese	Yuasa et al., 1988
#	ORM1*VU	German	Weidinger (unpublished)	#	ORM2*H17	Japanese	Yuasa et al., 1990a
ORM1*C2	ORM1*S1	French	Weidinger (unpublished)	#	ORM2*H19	Japanese	Yuasa et al., 1990b
ORM1*C3	ORM1*H9	German	Weidinger (unpublished)	#	ORM2*H19	Libanese	Weidinger (unpublished)
#	ORM1*H9	Swiss	Eap et al., 1988	#	ORM2*H19	Japanese	Yuasa et al., 1987
ORM1*C4	ORM1*S2	German	Yuasa (unpublished)	#	ORM2*H9	Japanese	Tsuge et al., 1987
#	ORM1*S2	Swiss	Weidinger (unpublished)	#	ORM2*H9	Vietnames	Duche (unpublished)
ORM1*C5	ORM2*B1	German	Eap et al., 1988	#	ORM2*H9	German	Weidinger (unpublished)
ORM1*C6	ORM1*H6	Japanese	Weidinger (unpublished)	#	ORM2*H9	German	Weidinger (unpublished)
ORM1*C7	ORM1*V2	Japanese	Tsuge et al., 1987	#	ORM2*H9	German	Weidinger (unpublished)
Duplicated alleles				#	ORM2*H9	German	Weidinger (unpublished)
#	ORM1*QF1S	Japanese	Yuasa et al., 1987	#	ORM2*H116H18	ORM2*DaS	Weidinger (unpublished)
#	ORM1*DB9S	Japanese	Yuasa et al., 1988	#	ORM2*Q0	ORM2*Q0	Tsuge et al., 1987
#	ORM1*BA	Argentina	Weidinger (unpublished)	#	ORM2*Q0	ORM2*Q0	Umetsu et al., 1988
Null allele				#	ORM2*Q0	ORM2*Q0	Yuasa et al., 1990b
#	ORM1*Q0	Japanese	Yuasa et al., 1990b	#	ORM2*Q0	ORM2*Q0	Kasulke and Weidinger, 1990
#	ORM1*Q0	German	Kasulke and Weidinger, 1990	#	ORM2*Q0	ORM2*Q0	Umetsu et al., 1988
#	ORM1*Q0	Japanese		#	ORM2*Q0	ORM2*Q0	Yuasa et al., 1990b

indicates that family data were available.