Prevalence and Molecular Characterization of Glucose- 6- Phosphate Dehydrogenase Deficiency in the Lue Ethnic Group of Northern Thailand

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Supplementary Table 1 Primer sequences and exon of G6PD gene amplified

Exon	Primer	Annealing Temp. (°C)	Size (bp)
2	5'-CTCAAGAAAGGGGCTAACTTCTCAA-3' 5-'GGAATTCCTGGCTTTTAAGATTGGG-3'	52	241
3, 4	5'-AGGATGATGTATGTAGGTCG-3' 5'- CCGAAGTTGGCCATGCTGGG-3'	55	378
5	5'-GTGTGTCTGTCTGTCCGTGTC-3' 5-'CACGCTCATAGAGTGGTGGG-3'	55	320
6, 7	5'-GGGAGGGCGTCTGAATGA-3' 5'-CCAGCCTCCCAGGAGAGAGG-3'	55	572
8	5'-CATGCCCTTGAACCAGGTGA-3' 5'-GCATGCACACCCCAGCTC-3'	54	241
9, 10	5'-TTCTCTCCCTTGGCTTTCTC-3' 5'-AAGACGTCCAGGATGAGGTGATC-3'	51	737
11, 12, 13	5-'GAAGCCGGGCATGTTCTTCAAC-3' 5-'GTCAATGGTCCCGGAGTC-3'	56	721

Supplementary Table 2. General data of G6PD deficiency prevalence among ethnic groups residing in the upper Greater Mekong Subregion for the purposes of comparison

Ethnicity	Linguistic Family	No. of samples	No. of G6PD deficiency			Prevalence (%)	Reference
			Male	Female	Total		
Mon1*	Austroasiatic	162	19		19	11.73	Nuchphayoon (2008)
Khmer1	Austroasiatic	322	25	15	40	12.42	Matsuoka (2005)
Khmer2	Austroasiatic	208	1	1	2	0.97	Matsuoka (2005)
Khmer3	Austroasiatic	135	2		2	1.48	Matsuoka (2005)
Mon2*	Austroasiatic	45	3		3	6.67	Iwai et al (2001)
Yao	Hmong–Mien	3056	31	23	54	1.77	Jiang et al. (2006)
Han	Sino-Tibetan	133752	3084	2546	5630	4.21	Jiang et al. (2006)
Hakka	Sino-Tibetan	2607	81	27	108	4.14	Jiang et al. (2006)
She	Sino-Tibetan	1962	71	37	108	5.50	Jiang et al. (2006)
Bai	Sino-Tibetan	5292	43	23	66	1.25	Jiang et al. (2006)
Yi	Sino-Tibetan	442	18	5	23	5.20	Jiang et al. (2006)
Jingpo	Sino-Tibetan	192	19	12	31	16.15	Jiang et al. (2006)
Hani	Sino-Tibetan	495	23	13	36	7.27	Jiang et al. (2006)
Ji Ruo	Sino-Tibetan	322	46		46	14.29	Jiang et al. (2006)
Kachin (Jingpo)	Sino-Tibetan	1770	187	336	523	29.55	Li et al. (2015)
Kachin1	Sino-Tibetan	100	12	12	24	24.00	Deng et al. (2017)
Jingpo	Sino-Tibetan	372	12	10	22	5.91	He et al. (2018)
Burmese1*	Sino-Tibetan	178	17		17	9.55	Nuchphayoon (2008)
Burmese2*	Sino-Tibetan	529	39		39	7.37	Iwai et al (2001)
Danu*	Sino-Tibetan	28	2		2	7.14	Iwai et al (2001)
Kachin2*	Sino-Tibetan	128	8		8	6.25	Iwai et al (2001)
Chinese*	Sino-Tibetan	90	4		4	4.44	Iwai et al (2001)

Lisu*	Sino-Tibetan	38	1		1	2.63	Iwai et al (2001)
Akha*	Sino-Tibetan	45	0		0	0.00	Iwai et al (2001)
Zhaung	Tai-Kadai	5255	338	156	494	9.40	Jiang et al. (2006)
Dai1	Tai-Kadai	504	63	24	87	17.26	Jiang et al. (2006)
Dai2	Tai-Kadai	1530	68	64	132	8.63	He et al. (2018)
Shan*	Tai-Kadai	37	4		4	10.81	Iwai et al (2001)
Lao*	Tai-Kadai	291	21		21	7.22	Iwai et al (2001)
Lue	Tai-Kadai	296	20	20	40	13.51	Current study

*data obtained from males only

Supplementary Table 3. G6PD enzyme activity and molecular typing of 58 G6PD variant carriers observed in the Lue population

Population	Gender	G6PD unit (mU/ erytocyte per ml)	Hb (g/dL)	G6PD activity (U/g Hb)	G6PD typing	WHO group	Female (Homo/Hetero)
Lue5	F	60	13.3	0.45	Kaiping	2	Hetero
Lue5	F	290	12.3	2.36	Kaiping	2	Hetero
Lue6	F	350	13.7	2.55	Coimbra	2	Hetero
Lue1	F	374	14.1	2.65	Union	2	Hetero
Lue6	F	428	14.6	2.93	Kaiping	2	Hetero
Lue2	F	365	11.5	3.17	Kaiping	2	Hetero
Lue3	F	433	13.1	3.31	Kaiping	2	Hetero
Lue1	F	431	12.1	3.56	Union	2	Hetero
Lue1	F	540	13.1	4.12	Union	2	Hetero
Lue5	F	667	14.7	4.54	Kaiping	2	Hetero
Lue3	F	705	12.4	5.69	Union	2	Hetero
Lue5	F	812	14.2	5.72	Kaiping	2	Hetero
Lue3	F	769	13.2	5.83	Kaiping	2	Hetero
Lue3	F	745	12.1	6.16	Kaiping	2	Hetero
Lue2	F	847	13.2	6.42	Kaiping	2	Hetero
Lue6	F	981	13	7.55	Kaiping	2	Hetero
Lue5	F	930	11	8.45	Kaiping	2	Hetero
Lue1	F	1031	11.2	9.21	Union	2	Hetero
Lue3	F	1215	11.3	10.75	Kaiping	2	Hetero
Lue1	M	60	15.3	0.39	Valladolid	2	
Lue3	M	60	14.8	0.41	Kaiping	2	
Lue6	M	60	13.9	0.43	Union	2	
Lue1	M	60	12.6	0.48	Valladolid	2	
Lue4	M	60	11.7	0.51	Kaiping	2	

Lue3	M	108	13.8	0.78	Union	2	
Lue2	M	249	14.5	1.72	Kaiping	2	
Lue4	F	60	12.5	0.48	Gaohe	3	Homo
Lue4	F	177	13.2	1.34	Aures	3	Homo
Lue3	F	378	12	3.15	Canton	3	Hetero
Lue6	F	563	15.2	3.70	Canton	3	Hetero
Lue3	F	485	12.7	3.82	Canton	3	Hetero
Lue1	F	536	13	4.12	Viangchan	3	Hetero
Lue6	F	545	12	4.54	Viangchan	3	Hetero
Lue4	F	651	13.7	4.75	Canton	3	Hetero
Lue4	F	644	12	5.37	Canton	3	Hetero
Lue6	F	796	13.3	5.98	Canton	3	Hetero
Lue4	F	824	12	6.87	Canton	3	Hetero
Lue3	F	747	9.7	7.70	Canton	3	Hetero
Lue2	F	1128	12.5	9.02	Canton	3	Hetero
Lue3	F	935	9.6	9.74	Canton	3	Hetero
Lue6	F	1385	12.2	11.35	Canton	3	Hetero
Lue2	F	1621	11.3	14.35	Canton	3	Hetero
Lue2	M	16	14.2	0.11	Canton	3	
Lue3	M	60	15.3	0.39	Canton	3	
Lue6	M	60	15.3	0.39	Viangchan	3	
Lue4	M	60	14.6	0.41	Canton	3	
Lue3	M	60	14.1	0.43	Canton	3	
Lue4	M	60	13.6	0.44	Aures	3	
Lue4	M	60	13.2	0.45	Gaohe	3	
Lue1	M	60	12.5	0.48	Canton	3	
Lue3	M	60	12.2	0.49	Canton	3	
Lue4	M	60	12.2	0.49	Gaohe	3	

Lue4	M	60	12	0.50	Canton	3
Lue2	M	186	12.3	1.51	Mahidol	3
Lue6	F	490	13	3.77	Unknown variant	
Lue6	F	603	14.2	4.25	Unknown variant	
Lue6	F	579	12.8	4.52	Unknown variant	
Lue6	M	408	14.7	2.78	Unknown variant	