

Supplementary Table 1. Plasmapheresis donor selection criteria in China.

Supplementary Table 2. Association between recent plasmapheresis donation frequency and risk of low serum protein and electrolyte.

Supplementary Table 3. Association between total number of lifetime plasmapheresis donation and risk of low serum protein and electrolyte.

Supplementary Table 4. Alb level and related influencing factors.

Supplementary Table 1. Plasmapheresis donor selection criteria in China.

Parameters	Values
Age	18-60 years
Weight	≥50Kg for males and ≥45Kg for females
Blood pressure	Systolic between 90 and 140 mm Hg vs. diastolic between 60 and 90 mm Hg vs. pulse pressure difference ≥ 30 mm Hg
Pulse	Regular pulse between 60-100 beats per minute
Temperature	Normal
Hb	≥120g/L for males and ≥110g/L for females
Serum/plasma protein	Serum protein ≥60g/L; plasma protein ≥50g/L
Alanine aminotransferase (ALT)	≤50 μ/L for both males and females
Hepatitis B virus surface antigen (HBsAg)	Negative
Hepatitis C virus antibody (HCVAb)	Negative
HIV-1 and HIV-2 antibody	Negative
Syphilis	Negative
Donation interval	2 weeks
Serum/plasma electrophoresis	Compared with the normal plasma electrophoretogram, the electrophoretogram bands of donors did not increase or decrease. Albumin content not less than 50%.
Temporary deferral	Prospective plasmapheresis donor ineligible in donation for a time-limited period and can return for further donation
Permanent deferral	Prospective plasmapheresis donor unable to donate forever for one or a variety of reasons

Supplementary Table 2. Association between recent plasmapheresis donation frequency and risk of low serum protein and electrolyte.

Measurements		Male				Female			
		New donors* (n=384)	Recent Donation frequency (times per year)			New donors* (n=342)	Recent Donation frequency (times per year)		
			1-8 (n=107)	9-16 (n=109)	>16 (n=174)		1-8 (n=108)	9-16 (n=106)	>16 (n=163)
Low IgG	No (%) events	19 (4.9)	5 (4.7)	7 (6.4)	7 (4.0)	5 (1.5)	3 (2.8)	1 (0.9)	3 (1.8)
	p (unadjusted model)	Reference group	0.694	0.733	0.607	Reference group	0.288	0.851	0.518
	p (adjusted model)#	Reference group	0.649	0.743	0.448	Reference group	0.068	0.901	0.298
Low TSP	No (%) events	52 (13.5)	11 (10.3)	11 (10.1)	24 (13.8)	36 (10.5)	12 (11.1)	10 (9.4)	22 (13.5)
	p (unadjusted model)	Reference group	0.435	0.367	0.622	Reference group	0.979	0.755	0.252
	p (adjusted model)#	Reference group	0.531	0.472	0.776	Reference group	0.398	0.756	0.205
Low Alb	No (%) events	69 (17.97)	23 (21.5)	18 (16.5)	50 (28.7)	104 (30.41)	41 (37.9)	37 (34.9)	67 (41.1)
	p (unadjusted model)	Reference group	0.537	0.784	0.014	Reference group	0.17	0.402	0.042
	p (adjusted model)#	Reference group	0.963	0.284	0.557	Reference group	0.136	0.624	0.25
Low ACCA	No (%) events	32 (8.33)	3 (2.8)	3 (2.8)	4 (2.3)	22 (6.43)	4 (3.7)	3 (2.8)	3 (1.8)
	p (unadjusted model)	Reference group	0.09	0.081	0.038	Reference group	0.34	0.216	0.075
	p (adjusted model)#	Reference group	0.096	0.051	0.017	Reference group	0.87	0.701	0.548
Low K ⁺	No (%) events	34 (8.9)	8 (7.5)	10 (9.2)	10 (5.7)	20 (5.8)	4 (3.7)	2 (1.9)	5 (3.1)
	p (unadjusted model)	Reference group	0.623	0.991	0.164	Reference group	0.326	0.117	0.206
	p (adjusted model)#	Reference group	0.251	0.398	0.038	Reference group	0.358	0.09	0.105
Low Mg ²⁺	No (%) events	41 (10.7)	19 (7.8)	7 (8.4)	8 (12.9)	43 (12.6)	11 (10.2)	16 (15.1)	19 (11.7)
	p (unadjusted model)	Reference group	0.565	0.199	0.217	Reference group	0.17	0.424	0.389
	p adjusted model)#	Reference group	0.876	0.232	0.184	Reference group	0.458	0.355	0.392

Adjusted for multiple comparisons by Bonferroni correction.

*New donors served as the control group and each experimental group was compared with the control group.

Adjusted for age, BMI, living place, meat intake, education, smoking and drinking, annual household income, physical activity (female donors additionally adjusted menstrual history).

Abbreviations: TSP, total serum protein; IgG, immunoglobulin G; Alb, albumin; Hb, hemoglobin; ACCA, albumin-corrected calcium; IQR, interquartile range.

Supplementary Table 3. Association between total number of lifetime plasmapheresis donation and risk of low serum protein and electrolyte.

Measurement		Male						Female		
		New donors* (n=384)	Total number of lifetime donations			New donors* (n=342)	Total number of lifetime donations			
			1-50 (n=245)	51-100 (n=83)	>100 (n=62)		1-50 (n=228)	51-100 (n=89)	>100 (n=60)	
Low IgG	No (%) events	19 (4.9)	14 (5.7)	4 (4.8)	1 (1.6)	5 (1.5)	4 (1.8)	1 (1.1)	2 (3.3)	
	p (unadjusted model)	Reference group	0.942	0.706	0.424	Reference group	0.622	0.971	0.174	
	p (adjusted model) [#]	Reference group	0.988	0.814	0.156	Reference group	0.207	0.772	0.244	
Low TSP	No (%) events	52 (13.5)	20 (8.2)	16 (19.3)	10 (16.1)	36 (10.5)	21 (9.2)	12 (13.5)	11 (18.3)	
	p (unadjusted model)	Reference group	0.042	0.117	0.139	Reference group	0.449	0.284	0.033	
	p (adjusted model) [#]	Reference group	0.144	0.111	0.381	Reference group	0.543	0.145	0.439	
Low Alb	No (%) events	69 (17.97)	49 (20.0)	22 (26.5)	20 (33.3)	104 (30.41)	83 (36.4)	34 (38.2)	27 (45.0)	
	p (unadjusted model)	Reference group	0.604	0.089	0.036	Reference group	0.145	0.214	0.047	
	p (adjusted model) [#]	Reference group	0.978	0.782	0.388	Reference group	0.132	0.657	0.456	
Low ACCA	No (%) events	31 (8.07)	3 (1.2)	3 (3.6)	4 (6.5)	22 (6.43)	3 (1.3)	3 (3.4)	4 (6.7)	
	p (unadjusted model)	Reference group	0.004	0.187	0.995	Reference group	0.056	0.997	0.762	
	p (adjusted model) [#]	Reference group	0.018	0.101	0.106	Reference group	0.824	0.997	0.337	
Low K ⁺	No (%) events	34 (8.9)	17 (6.9)	8 (9.6)	3 (4.8)	20 (5.8)	6 (2.6)	4 (4.5)	1 (1.7)	
	p (unadjusted model)	Reference group	0.307	0.81	0.263	Reference group	0.057	0.729	0.25	
	p (adjusted model) [#]	Reference group	0.055	0.329	0.452	Reference group	0.068	0.487	0.118	
Low Mg ²⁺	No (%) events	41 (10.7)	22 (9.7)	18 (20.7)	6 (10.3)	43 (12.6)	22 (9.6)	18 (20.2)	6 (10.0)	
	p (unadjusted model)	Reference group	0.088	0.582	0.829	Reference group	0.106	0.088	0.387	
	p (adjusted model) [#]	Reference group	0.238	0.662	0.272	Reference group	0.263	0.088	0.407	

Adjusted for multiple comparisons by Bonferroni correction.

*New donors served as the control group and each experimental group was compared with the control group.

[#] Adjusted for age, BMI, living place, meat intake, education, smoking and drinking, annual household income, physical activity (female donors additionally adjusted menstrual history).

Abbreviations: TSP, total serum protein; IgG, immunoglobulin G; Alb, albumin; Hb, hemoglobin; ACCA, albumin-corrected calcium; IQR, interquartile range.

Supplementary Table 4. Alb level and related influencing factors.

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
Female donors					
(Constant)	3.686	0.059		62.683	0
Living place	0.023	0.004	0.283	6.273	0
Age	-0.001	0.001	-0.139	-2.253	0.025
BMI	0	0.001	0.005	0.108	0.914
Education	0.006	0.008	0.042	0.759	0.448
Annual household income(yuan)	-0.021	0.007	-0.13	-2.98	0.3
Physical activity	0.008	0.008	0.043	0.955	0.34
Meat intake	0.013	0.009	0.057	1.35	0.178
Smoking	0.013	0.019	0.03	0.673	0.501
Drinking	-0.022	0.021	-0.048	-1.072	0.284
Menstrual history	0.023	0.014	0.081	1.593	0.112
Male donors					
(Constant)	3.704	0.053		69.957	0
Living place	0.05	0.007	0.317	7.066	0
Age	-0.002	0	-0.21	-4.552	0
BMI	0	0.001	-0.004	-0.1	0.921
Education	0.002	0.006	0.014	0.306	0.76
Annual household income(yuan)	-0.003	0.008	-0.018	-0.409	0.683
Physical activity	-0.006	0.008	-0.03	-0.712	0.477
Meat intake	0.01	0.011	0.039	0.906	0.366
Smoking	0.01	0.006	0.063	1.485	0.138
Drinking	-0.004	0.009	-0.016	-0.381	0.704