

Table S1. Spearman's Correlation Matrix between Clinical Background Characteristics and Laboratory/Erythrocyte Parameters (N = 29)

Values represent Spearman's rank correlation coefficients (ρ), with corresponding P-values shown in parentheses (). Statistically significant correlations ($P < 0.05$) are highlighted in bold with light blue shading. *ESA dose and ERI correlations were evaluated among patients receiving ESA therapy ($n = 18$).

Clinical Parameter	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Age (years)	0.176 ($p=0.361$)	0.224 ($p=0.242$)	0.163 ($p=0.398$)	0.123 ($p=0.527$)	-0.039 ($p=0.843$)	-0.017 ($p=0.932$)	0.121 ($p=0.532$)	0.157 ($p=0.415$)	-0.084 ($p=0.664$)	0.209 ($p=0.276$)	-0.242 ($p=0.206$)	-0.154 ($p=0.426$)	0.106 ($p=0.584$)	0.099 ($p=0.609$)	-0.181 ($p=0.349$)	-0.153 ($p=0.428$)	0.018 ($p=0.928$)
Systolic Blood Pressure (mmHg)	-0.364 ($p=0.052$)	-0.286 ($p=0.132$)	-0.139 ($p=0.472$)	0.218 ($p=0.256$)	0.324 ($p=0.086$)	0.309 ($p=0.103$)	-0.152 ($p=0.430$)	-0.214 ($p=0.264$)	-0.082 ($p=0.671$)	-0.205 ($p=0.286$)	0.094 ($p=0.629$)	0.003 ($p=0.987$)	0.092 ($p=0.636$)	-0.014 ($p=0.944$)	-0.200 ($p=0.297$)	-0.125 ($p=0.519$)	-0.167 ($p=0.388$)
Diastolic Blood Pressure (mmHg)	-0.446 ($p=0.015$)	-0.410 ($p=0.027$)	-0.271 ($p=0.154$)	0.018 ($p=0.926$)	0.232 ($p=0.226$)	0.213 ($p=0.268$)	-0.253 ($p=0.186$)	-0.288 ($p=0.130$)	-0.045 ($p=0.816$)	-0.294 ($p=0.121$)	0.141 ($p=0.466$)	0.050 ($p=0.797$)	0.032 ($p=0.869$)	0.030 ($p=0.876$)	-0.136 ($p=0.481$)	-0.055 ($p=0.775$)	-0.052 ($p=0.789$)
Height (cm)	-0.030 ($p=0.877$)	0.036 ($p=0.855$)	0.146 ($p=0.450$)	0.296 ($p=0.119$)	-0.173 ($p=0.370$)	-0.164 ($p=0.394$)	0.329 ($p=0.082$)	0.372 ($p=0.047$)	0.062 ($p=0.748$)	0.314 ($p=0.097$)	-0.011 ($p=0.955$)	-0.119 ($p=0.538$)	-0.163 ($p=0.397$)	-0.287 ($p=0.131$)	0.184 ($p=0.338$)	0.344 ($p=0.068$)	-0.174 ($p=0.366$)
Dry Weight (kg)	-0.185 ($p=0.338$)	-0.134 ($p=0.488$)	-0.050 ($p=0.798$)	0.124 ($p=0.520$)	-0.082 ($p=0.672$)	-0.070 ($p=0.719$)	0.267 ($p=0.161$)	0.234 ($p=0.222$)	-0.078 ($p=0.689$)	0.194 ($p=0.314$)	0.062 ($p=0.748$)	-0.019 ($p=0.922$)	-0.001 ($p=0.996$)	-0.026 ($p=0.895$)	-0.033 ($p=0.867$)	0.021 ($p=0.915$)	-0.062 ($p=0.751$)
BMI (kg/m²)	-0.138 ($p=0.475$)	-0.097 ($p=0.617$)	-0.055 ($p=0.777$)	0.062 ($p=0.748$)	-0.065 ($p=0.738$)	-0.057 ($p=0.771$)	0.187 ($p=0.332$)	0.129 ($p=0.505$)	-0.298 ($p=0.116$)	0.070 ($p=0.716$)	0.132 ($p=0.494$)	0.159 ($p=0.409$)	0.100 ($p=0.606$)	0.132 ($p=0.495$)	-0.201 ($p=0.296$)	-0.165 ($p=0.394$)	-0.006 ($p=0.976$)
HD Vintage (years)	0.372 ($p=0.047$)	0.263 ($p=0.168$)	0.223 ($p=0.246$)	0.077 ($p=0.693$)	-0.140 ($p=0.468$)	-0.151 ($p=0.435$)	0.156 ($p=0.420$)	0.140 ($p=0.469$)	0.094 ($p=0.626$)	0.121 ($p=0.532$)	0.092 ($p=0.635$)	0.130 ($p=0.502$)	0.037 ($p=0.849$)	-0.152 ($p=0.432$)	0.310 ($p=0.101$)	0.326 ($p=0.084$)	0.052 ($p=0.789$)
CRP (mg/dL)	-0.119 ($p=0.539$)	-0.107 ($p=0.582$)	-0.100 ($p=0.607$)	-0.119 ($p=0.539$)	-0.105 ($p=0.589$)	-0.096 ($p=0.621$)	0.438 ($p=0.017$)	0.446 ($p=0.015$)	-0.358 ($p=0.057$)	0.413 ($p=0.026$)	0.037 ($p=0.847$)	-0.090 ($p=0.642$)	-0.032 ($p=0.870$)	0.056 ($p=0.774$)	-0.177 ($p=0.357$)	-0.099 ($p=0.611$)	-0.037 ($p=0.847$)
ESA Dose (IU/week)	-0.030 ($p=0.907$)	0.150 ($p=0.552$)	0.243 ($p=0.331$)	0.296 ($p=0.233$)	-0.244 ($p=0.328$)	-0.242 ($p=0.333$)	-0.285 ($p=0.252$)	0.056 ($p=0.827$)	-0.269 ($p=0.280$)	-0.111 ($p=0.662$)	0.001 ($p=0.997$)	-0.051 ($p=0.840$)	-0.355 ($p=0.148$)	-0.345 ($p=0.160$)	0.547 ($p=0.019$)	0.540 ($p=0.021$)	-0.039 ($p=0.879$)
ERI	-0.138 ($p=0.584$)	0.003 ($p=0.990$)	0.049 ($p=0.848$)	0.124 ($p=0.624$)	-0.035 ($p=0.891$)	-0.030 ($p=0.904$)	-0.433 ($p=0.073$)	-0.107 ($p=0.673$)	-0.040 ($p=0.876$)	-0.245 ($p=0.328$)	0.001 ($p=0.997$)	-0.038 ($p=0.880$)	-0.335 ($p=0.174$)	-0.317 ($p=0.200$)	0.453 ($p=0.059$)	0.474 ($p=0.047$)	-0.028 ($p=0.913$)

Abbreviations: BMI, body mass index; HD, hemodialysis; CRP, C-reactive protein; ESA, erythropoiesis-stimulating agent; ERI, erythropoietin resistance index. Parameters 1 to 17 correspond to: 1. Free carnitine; 2. Total carnitine; 3. Acylcarnitine; 4. AC/FC ratio; 5. FRC (%); 6. FRC count; 7. Hemoglobin; 8. Hematocrit; 9. Reticulocyte; 10. RBC count; 11. MCV; 12. MCH; 13. MCHC; 14. Curve slope (a); 15. MCF (b); 16. 5% Hemolysis; 17. 95% Hemolysis.

Table S2. Spearman's Correlation Matrix of All Laboratory and Erythrocyte Parameters (N = 29)

Values represent Spearman's rank correlation coefficients (ρ), with corresponding P-values shown in parentheses (). Values on the diagonal (-) represent the correlation of each parameter with itself ($\rho = 1.000$). Statistically significant correlations ($P < 0.05$) are highlighted in bold with light blue shading. The column numbers 1 to 17 correspond to the respective numbered parameters in the left-hand column.

Parameter	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1. Free carnitine (FC)	-																
2. Total carnitine (TC)	0.903 ($p < 0.001$)	-															
3. Acylcarnitine (AC)	0.702 ($p < 0.001$)	0.919 ($p < 0.001$)	-														
4. AC/FC ratio	0.125 ($p = 0.517$)	0.468 ($p = 0.011$)	0.741 ($p < 0.001$)	-													
5. FRC (%)	-0.192 ($p = 0.320$)	-0.274 ($p = 0.151$)	-0.340 ($p = 0.071$)	-0.282 ($p = 0.138$)	-												
6. FRC count	-0.191 ($p = 0.321$)	-0.268 ($p = 0.160$)	-0.337 ($p = 0.074$)	-0.276 ($p = 0.147$)	0.996 ($p < 0.001$)	-											
7. Hemoglobin	0.312 ($p = 0.099$)	0.351 ($p = 0.062$)	0.391 ($p = 0.036$)	0.344 ($p = 0.067$)	-0.380 ($p = 0.042$)	-0.341 ($p = 0.070$)	-										
8. Hematocrit	0.310 ($p = 0.102$)	0.314 ($p = 0.097$)	0.312 ($p = 0.099$)	0.216 ($p = 0.261$)	-0.415 ($p = 0.025$)	-0.379 ($p = 0.042$)	0.887 ($p < 0.001$)	-									
9. Reticulocyte	-0.030 ($p = 0.875$)	-0.164 ($p = 0.395$)	-0.258 ($p = 0.177$)	-0.401 ($p = 0.031$)	0.361 ($p = 0.055$)	0.351 ($p = 0.062$)	-0.351 ($p = 0.062$)	-0.376 ($p = 0.044$)	-								
10. RBC count	0.303 ($p = 0.110$)	0.357 ($p = 0.057$)	0.366 ($p = 0.051$)	0.303 ($p = 0.110$)	-0.339 ($p = 0.072$)	-0.282 ($p = 0.138$)	0.877 ($p < 0.001$)	0.836 ($p < 0.001$)	-0.406 ($p = 0.029$)	-							
11. MCV	-0.221 ($p = 0.250$)	-0.296 ($p = 0.119$)	-0.269 ($p = 0.159$)	-0.259 ($p = 0.175$)	0.120 ($p = 0.536$)	0.057 ($p = 0.767$)	-0.328 ($p = 0.082$)	-0.182 ($p = 0.345$)	0.242 ($p = 0.207$)	-0.628 ($p < 0.001$)	-						
12. MCH	0.027 ($p = 0.887$)	0.001 ($p = 0.995$)	0.035 ($p = 0.858$)	-0.022 ($p = 0.908$)	-0.009 ($p = 0.962$)	-0.068 ($p = 0.725$)	-0.102 ($p = 0.597$)	-0.170 ($p = 0.379$)	0.179 ($p = 0.354$)	-0.513 ($p = 0.004$)	0.791 ($p < 0.001$)	-					
13. MCHC	0.315 ($p = 0.096$)	0.391 ($p = 0.036$)	0.430 ($p = 0.020$)	0.337 ($p = 0.074$)	-0.008 ($p = 0.966$)	0.004 ($p = 0.982$)	0.340 ($p = 0.071$)	-0.020 ($p = 0.919$)	-0.001 ($p = 0.997$)	0.204 ($p = 0.288$)	-0.365 ($p = 0.051$)	0.182 ($p = 0.345$)	-				
14. Curve slope (a)	0.387 ($p = 0.038$)	0.298 ($p = 0.116$)	0.158 ($p = 0.413$)	-0.151 ($p = 0.435$)	0.398 ($p = 0.032$)	0.379 ($p = 0.043$)	-0.126 ($p = 0.514$)	-0.206 ($p = 0.284$)	0.168 ($p = 0.382$)	-0.189 ($p = 0.327$)	0.069 ($p = 0.721$)	0.220 ($p = 0.251$)	0.355 ($p = 0.059$)	-			
15. MCF (b)	0.351 ($p = 0.062$)	0.360 ($p = 0.055$)	0.258 ($p = 0.177$)	-0.050 ($p = 0.797$)	-0.150 ($p = 0.439$)	-0.148 ($p = 0.445$)	-0.046 ($p = 0.811$)	0.061 ($p = 0.754$)	0.200 ($p = 0.299$)	0.046 ($p = 0.814$)	-0.072 ($p = 0.709$)	-0.129 ($p = 0.503$)	-0.185 ($p = 0.336$)	-0.097 ($p = 0.617$)	-		
16. 5% Hemolysis (xstart)	-0.074 ($p = 0.702$)	-0.031 ($p = 0.875$)	-0.031 ($p = 0.873$)	0.003 ($p = 0.988$)	-0.365 ($p = 0.052$)	-0.353 ($p = 0.061$)	0.070 ($p = 0.719$)	0.252 ($p = 0.188$)	-0.093 ($p = 0.633$)	0.179 ($p = 0.353$)	-0.030 ($p = 0.878$)	-0.205 ($p = 0.287$)	-0.460 ($p = 0.012$)	-0.751 ($p < 0.001$)	0.652 ($p < 0.001$)	-	
17. 95% Hemolysis (xcomp)	0.485 ($p = 0.008$)	0.401 ($p = 0.031$)	0.210 ($p = 0.275$)	-0.236 ($p = 0.219$)	0.216 ($p = 0.261$)	0.199 ($p = 0.301$)	-0.182 ($p = 0.344$)	-0.152 ($p = 0.432$)	0.284 ($p = 0.135$)	-0.187 ($p = 0.332$)	0.077 ($p = 0.691$)	0.146 ($p = 0.449$)	0.134 ($p = 0.489$)	0.781 ($p < 0.001$)	0.507 ($p = 0.005$)	-0.227 ($p = 0.236$)	-

Abbreviations: FC, free carnitine; TC, total carnitine; AC, acylcarnitine; AC/FC, acylcarnitine-to-free carnitine ratio; FRC, fragmented red blood cell; RBC, red blood cell; MCV, mean corpuscular volume; MCH, mean corpuscular hemoglobin; MCHC, mean corpuscular hemoglobin concentration; MCF, mean corpuscular fragility.

Table S3. Multivariable Linear Regression Models (General Linear Model) Evaluating the Association Between Erythrocyte 95% Complete Hemolysis Concentration (x_{comp}) and ESA Resistance Index (ERI)

Model	Independent Predictor	Unstandardized Coef. B	SE	Standardized Coef. β	95% Confidence Interval (CI)	P-value
Dependent Variable:						
ERI						
Unadjusted Model	Complete Hemolysis (x_{comp})	35.148	29.344	0.287	-27.059 to 97.355	0.248
Model 3A	Complete Hemolysis (x_{comp})	40.022	32.575	0.327	-30.953 to 110.996	0.243
	Age	0.037	0.068	0.139	-0.111 to 0.185	0.596
	Sex (Male vs. Female)	-0.811	1.882	-0.113	-4.911 to 3.289	0.674
	HD duration	0.028	0.125	0.057	-0.243 to 0.300	0.824
	CRP	-7.142	4.841	-0.369	-17.690 to 3.405	0.166
Model 3B (Model 3A + T2DM)						
	Complete Hemolysis (x_{comp})	43.668	33.014	0.356	-28.994 to 116.331	0.213
	Age	0.040	0.068	0.149	-0.111 to 0.190	0.573
	Sex (Male vs. Female)	-2.889	2.941	-0.403	-9.363 to 3.584	0.347
	HD duration	-0.071	0.165	-0.143	-0.435 to 0.293	0.675
	CRP	-5.247	5.286	-0.271	-16.881 to 6.388	0.342
	T2DM (Yes vs. No)	-2.795	3.027	-0.411	-9.458 to 3.868	0.376

Evaluated in patients receiving ESA therapy (n = 18).

Abbreviations: ERI, erythropoiesis-stimulating agent resistance index; HD, hemodialysis; CRP, C-reactive protein; T2DM, type 2 diabetes mellitus; CI, confidence interval; SE, standard error.