

Supplementary Table S1. Summary of flow cytometry methods.

	Probe	Parameter determined	Probe final concentration	Inductor	Death marker	Detector
ROS/RNS	HE	O ₂ ⁻	3.15 µg/mL	PB	DAPI	PE-Cy7
	H₂DCFDA	H ₂ O ₂	3.15 µg/mL	t-BHP	DAPI	FITC
	DHR 123	ONOO ⁻	250 ng/ml	PB + NOR-1	DAPI	FITC
	DAF-FMDA	NO	1.25 µM	NOR-1	DAPI	FITC
Non-enzymatic antioxidants	CMFDA	Reduced thiols	31.5 nM	t-BHP	DAPI	FITC
	MCB	Reduced GSH	0.016 nM	DEM	PI	BV421
Mitochondrial parameters	TMRM	Mitochondrial Ψ_m	756 nM	FCCP	DAPI	PE-Cy7
	MitoSOX	Mitochondrial O ₂ ⁻	800 nM	PB	DAPI	PE-Cy7
Intracellular Ca ²⁺	FLUO-4	Intracellular Ca ²⁺	625 nM	Ionomycin	DAPI	FITC
Oxidative damage to biomolecules	BODIPY 665/676	Oxidized/reduced lipid ratio	1.00 µM	t-BHP	DAPI	PE/APC
	FTC	Protein carbonylation	1.00 µM	Ac. Ascórbico + FeSO ₄	DAPI	FITC
Cell viability	DAPI	Cell death	800 ng/mL	-	-	-
	PI	Cell death	8 µg/mL	-	-	-

Supplementary Table S2. Oxidative stress, mitochondrial, intracellular calcium, and oxidative damage parameters of neutrophils isolated from individuals included in the study.

Variable	MM (n=7)	MZ (n=31)	SZ (n=8)	ZZ (n=15)	p-value
Superoxide anion (O₂⁻)	650.10 ± 250.3	417.60 ± 181.8	238.80 ± 87.47	457.80 ± 111.8	0.002
Hydrogen peroxide (H₂O₂)	29.10 (23.70-57.60)	25.40 (22.50-63.90)	57.10 (25.70-88.60)	79.05 (36.70-159.0)	0.002
Peroxynitrite (ONOO⁻)	240.00 ± 90.00	377.30 ± 51.83	587.50 ± 145.5	882.10 ± 128.00	<0.0001
Nitric oxide (NO)	36.40 ± 4.19	41.54 ± 4.50	58.48 ± 12.76	64.37 ± 6.06	0.028
Mitochondrial membrane potential ($\Delta\psi_m$)	985.2 ± 57.04	625.80 ± 62.96	867.00 ± 94.72	717.90 ± 61.43	0.007
Mitochondrial O₂ (mtO₂)	13.02 ± 3.39	15.03 ± 1.94	14.59 ± 4.33	20.27 ± 1.82	0.197
Intracellular calcium (iCa²⁺)	170.60 ± 7.65	170.40 ± 14.46	128.50 ± 22.64	191.70 ± 17.92	0.202
Oxidized proteins	14.35 ± 0.85	21.57 ± 1.65	23.18 ± 1.39	23.07 ± 1.71	0.041
Lipid peroxidation	75.58 ± 5.07	122.00 ± 22.76	169.90 ± 16.77	133.00 ± 14.36	0.046

Data are presented as mean ± standard deviation of arbitrary fluorescence units in those cases where the variable follows a normal distribution. Otherwise, the results are expressed as median (range). p-values lower than 0.05 were statistically significant (labeled in bold).

Supplementary Table S3. Enzymatic and non-enzymatic defense mechanisms of neutrophils isolated from individuals included in the study.

Variable	MM (n=7)	MZ (n=31)	SZ (n=8)	ZZ (n=15)	p-value
Cu/Zn Superoxide dismutase (Cu/Zn SOD)	1.26 ± 0.10	0.75 ± 0.17	0.49 ± 0.12	0.56 ± 0.11	0.018
Glutathione Reductase (GR)	0.70 ± 0.07	0.43 ± 0.07	0.64 ± 0.08	0.30 ± 0.05	0.0004
Catalase	1.35 ± 0.28	2.07 ± 0.31	2.61 ± 0.49	0.75 ± 0.18	0.178
Mn Superoxide dismutase (Mn-SOD)	0.95 ± 0.09	0.72 ± 0.06	1.02 ± 0.16	0.81 ± 0.09	0.284
Glutathione peroxidase (GPx)	1.05 ± 0.13	0.89 ± 0.20	0.92 ± 0.30	2.07 ± 0.49	0.118
Nuclear erythroid 2-related factor (Nrf2)	1.08 ± 0.12	0.85 ± 0.11	0.98 ± 0.24	0.76 ± 0.10	0.456
Reduced glutathione (GSH)	370.5 (318-383)	475 (284-585)	529 (482-628)	394 (330-574)	0.037
Reduced thiols	187.80 ± 10.79	216.70 ± 7.51	271.80 ± 23.62	227.40 ± 14.49	0.014

Data are presented as mean ± standard deviation of arbitrary fluorescence units in those cases where the variable follows a normal distribution. Otherwise, the results are expressed as median (range). p-values lower than 0.05 were statistically significant (labeled in bold).