

Supporting Information for

ORIGINAL ARTICLE

Natural exosome-like nanovesicles from edible tea flowers suppress metastatic breast cancer *via* ROS generation and microbiota modulation

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1. Experimental details

1.1. Physicochemical characterization of TFENs

The hydrodynamic particle size (nm), size distribution, and zeta potential (mV) of TFENs were characterized by using DLS instrument (Malvern, Nano ZS90, Worcestershire, UK).

The morphology of TFENs was visualized using a TEM (Zeiss, LEO 906E, Jena, Germany) after negatively stained with uranyl acetate (1%, w/v).

To evaluate the stability of TFENs in different sections of GIT and blood, they were suspended in simulated gastric fluid (pH = 1.2), simulated small intestinal fluid (pH = 7.4), simulated colonic fluid (pH = 6.8), and DMEM containing FBS (10%, v/v), respectively. After incubation for different time periods (0, 2, 4, and 8 h) at 37 °C, hydrodynamic particle size (nm) and zeta potential (mV) were determined by DLS measurements.

Total lipids were extracted from TFENs for lipidomic analysis, which was carried out by Shanghai Sensichip Infotech Co. (Shanghai, China). Briefly, TFEN suspension (100 µL, protein concentration: 3.0 µg/µL) was fully dissolved in a mixed solution (volume ratio of methyl tertiary butyl ether/methanol/water = 10:4:3, v/v, 2.0 mL), and centrifuged at 12,000×g for 20 min. The obtained supernatant was blow-dried and re-dissolved in a mixed solution (volume ratio of methanol/isopropanol = 1:1, v/v, 0.2 mL) for liquid chromatography-mass spectrometry (LC–MS, Thermo Fisher Scientific, Ultimate 3000LC, Q Exactive, San Jose, CA, USA) analysis. Finally, the results were analyzed using Lipid Search software (Thermo Fisher Scientific, Lipid Search software, San Jose, CA, USA), and the relative content of each lipid was displayed as the percentages of total lipids.

Isolated proteins from NTs were separated by sodium dodecyl sulfate-polyacrylamide gel electrophoresis (SDS-PAGE). The samples were shipped to Majorbio BioPharm Technology Co., Ltd. (shanghai, China) in dry ice. Proteins were identified and quantified by LC–MS/MS using an Orbitrap mass spectrometry (Thermo Fisher Scientific, Bremen, Germany). Finally, National Center for Biotechnology Information (NCBI) database was used to analyze the data.

To analyze the contents of polyphenols and flavonoid glycosides, total polyphenols and

flavonoid glycosides were extracted from TFENs, and the mixtures were centrifuged at $3000\times g$ for 20 min. Finally, the obtained supernatants were submitted into high-performance liquid chromatography (HPLC, Shimadzu, Kyoto, Japan).

1.2. Cell culture

Human breast cancer cell line (MCF-7 cell), mouse mammary carcinoma cell line (4T1), human lung carcinoma cell line (A549), human cervical cancer cell line (HeLa), human umbilical vein endothelial cell line (HUVEC), and human embryonic kidney cell line (HEK293T) were obtained from the Cell Bank of the Chinese Academy of Sciences (Shanghai, China). These cells were cultured in DMEM containing FBS (10%, *v/v*) and penicillin-streptomycin (1%, *w/v*) in CO₂ incubator at 37 °C.

1.3. In vitro cellular uptake profiles of TFENs

To quantitatively and qualitatively investigate the cellular uptake profiles of TFENs, a green fluorescence probe (DiO) was used to label these NPs. DiO solution (1×10^{-5} mol/L) was added to TFEN suspension (protein concentration: 1 mg/mL, 1 mL). Subsequently, the mixture was incubated for 30 min at 37 °C. Finally, the free DiO was removed using a 100 kDa ultracentrifuge filter, and the purified DiO-labeled TFENs were obtained.

MCF-7 cells and 4T1 cells were seeded in 6-well plates at the same density of 5×10^5 per well and incubated overnight. Thereafter, the complete culture medium was exchanged to serum-free medium containing DiO-labeled TFENs (protein concentration: 16 µg/mL). After co-incubation for different time intervals (1, 3, and 5 h), cells were washed 3 times with PBS to eliminate the excess NPs, collected, and re-suspended in PBS for flow cytometry (ACEA Novocyte™) analysis based on 10,000 gated cell events.

MCF-7 cells and 4T1 cells were seeded in 8-well plates (BD Falcon, MA, USA) at the same

cell density of 8×10^4 cells per well and incubated overnight. Subsequently, the complete culture medium was exchanged to serum-free medium containing DiO-labeled TFENs (protein concentration: 16 $\mu\text{g}/\text{mL}$). After co-incubation for 5 h, cells were washed 3 times with PBS to eliminate the excess NPs and fixed with paraformaldehyde solution (4%, *v/v*) solution for 20 min. AF633-phalloidin and DAPI were used to stain cytoskeleton and nucleus, respectively. Finally, the fluorescent images of cells were acquired using a confocal laser scanning microscope (Zeiss).

1.4. Trajectory analysis of TFENs

DiO-TFENs were dispersed in the buffer (pH 6.8) to obtain different NP suspensions (0.1%, *w/v*). Meanwhile, mucus-simulating hydrogel (hydroxyethylcellulose, 0.2%, *w/v*) was added to petri dish as travelling medium. Subsequently, a drop of DiO-TFEN suspension was added to the petri dish, and the movements of DiO-TFENs were recorded by a CCD camera at a phase difference of about 30 fps with fluorescence microscope (Olympus IX83, Tokyo, Japan). The trajectories of DiO-TFENs were extracted to calculate the mean-square-displacement (MSD) values.

1.5. Live/dead assay

MCF-7 cells, 4T1 cells, A549 cells, and HeLa cells were seeded in 12-well plate at a density of 2×10^5 cells per well and incubated overnight. Subsequently, cells were incubated with TFEN suspensions (protein concentration: 16 $\mu\text{g}/\text{mL}$, 2 mL). After incubation for 24 h, cells were rinsed with PBS to eliminate the excess NPs and stained using a live/dead cell viability assay kit. Finally, their images were acquired immediately using a fluorescent microscope (Olympus, IX73, Tokyo, Japan).

1.6. In vivo biodistribution

To track the *in vivo* biodistribution of TFENs after intravenous injection (i.v.) or oral administration, a near-infrared fluorescence probe (DiR) was used to label TFENs. An orthotopic breast tumor model and a model of metastatic breast cancer were established and administered with DiR-labeled TFENs at an equivalent DiR concentration (3 mg protein/kg per mouse) *via* i.v. or oral route. After administration for 6, 12, 24, 48, and 72 h, respectively, mice were sacrificed to obtain tumors and main organs (heart, liver, spleen, lung, and kidney). The images were captured using an IVIS spectrum imaging system (PerkinElmer/Caliper LifeSciences, Hopkinton, MA, USA). Free DiR was treated as a control in this study.

1.7. In vivo absorption site of TFENs after oral administration

To determine the absorption sites of orally administered TFENs in gastrointestinal tract (GIT), DiO-labeled TFENs were administered to BALB/c mice *via* oral route. Six hours after oral administration, mice were sacrificed and their whole GIT (stomach, duodenum, jejunum, ileum, and colon) was harvested. Tissues were embedded in Optimal Cutting Temperature compound. Eventually, tissue sections (8 μm) were stained with DAPI, and their fluorescence images were obtained using a fluorescent microscope (Olympus).

1.8. In vitro hemolysis assay

Briefly, fresh blood was collected from the eyelid posterior sinus vein of mice and centrifuged at $100 \times g$ for 20 min, washed 3 times, and suspended in PBS (2%, *v/v*). Meanwhile, TFENs with different concentrations (0.5–50 $\mu\text{g/mL}$) were co-cultured with erythrocytes solutions for 1 h at 37 °C prior to centrifugation at $3000 \times g$ for 15 min. Finally, hemoglobin amounts in the supernatants were analyzed by spectrophotometric tests at 570 nm. The untreated erythrocyte suspension was utilized as a negative control, whereas erythrocyte suspension treated with Triton X-100 (1%, *w/v*) was used as a positive control.

1.9. *In vivo* biosafety evaluation

Female BALB/c mice (8 weeks) were orally or intravenously administered with TFENs at the same dose of 3 mg/kg every two days. After 7 doses of TFEN treatment, mice were sacrificed. The main organs (heart, liver, spleen, lung, and kidney) and blood were obtained, and the organ index was calculated. The concentrations of the main pro-inflammatory factors (TNF- α , IL-6, and IL-12), alkaline phosphatase (ALP), glutamic-pyruvic transaminase (ALT), glutamic-oxaloacetic transaminase (AST), urea nitrogen (BUN), creatinine (CRE), and complement C3 in plasma were measured using their corresponding kits, respectively. The whole blood components were analyzed by the hematology analyzer (Mindray Biomedical Electronics Co., Ltd., BC-5000VET, Shenzhen, Guangdong, China). In addition, the tissues of the main organs and different sections of GIT were analyzed by H&E staining.

1.10. *Survival rate*

To determine the survival rate of different mouse groups, mouse lung metastasis model of breast cancer was established, and these mice were randomly divided into 3 groups (10 mice per group). Mice were treated with TFENs (3 mg/kg) *via* i.v. injection or oral administration, respectively. The survival numbers of these 3 mouse groups were updated every day.

1.11. *Statistical analysis*

Data were presented as mean \pm standard error of mean (SEM). Statistical significance was analyzed using a Student's *t*-test for *in vitro* data processing and an ANOVA test for *in vivo* data processing. Statistical significance was represented by * $P < 0.05$ and ** $P < 0.01$.

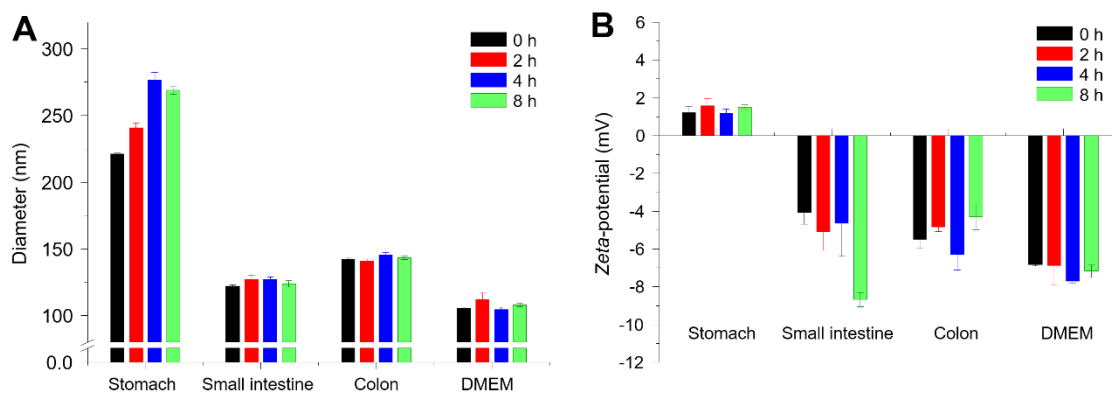


Figure S1 The stabilities of TFENs in various buffers. (A) Particle size variations and (B) zeta potential variations ($n=3$).

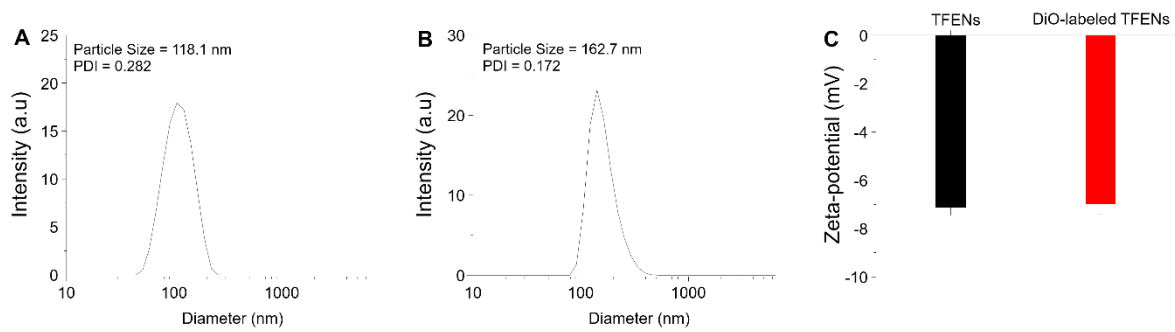


Figure S2 The hydrodynamic particle sizes of (A) TFENs and (B) DiO-labeled TFENs and (C) their zeta potentials. Each point represents the mean \pm SEM ($n = 3$).

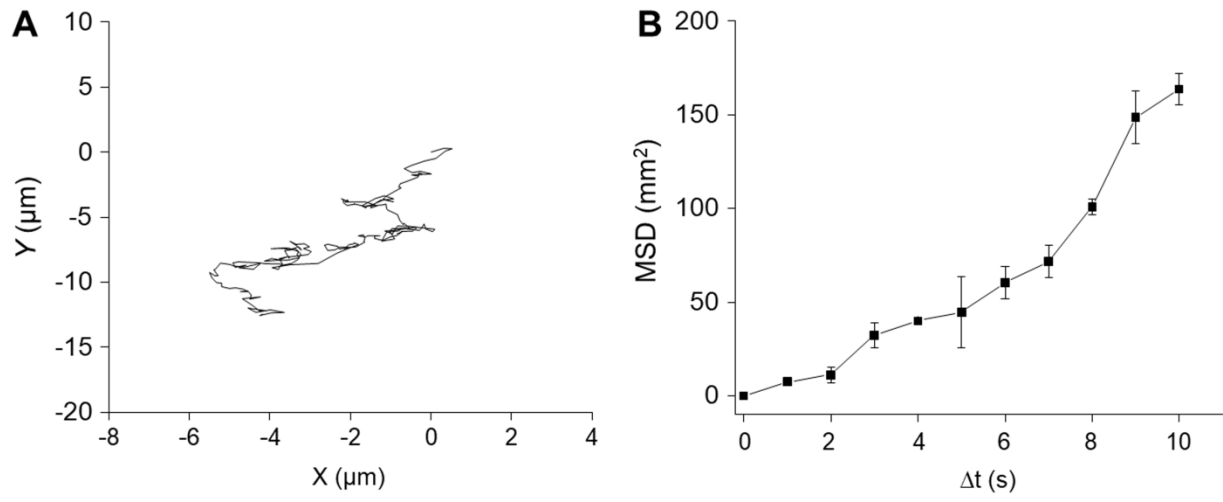


Figure S3 The mucus penetration profile of TFENs. (A) Representative motion trajectories of TFENs. (B) Average MSD of TFENs in the mucus-simulating hydrogel ($n = 3$).

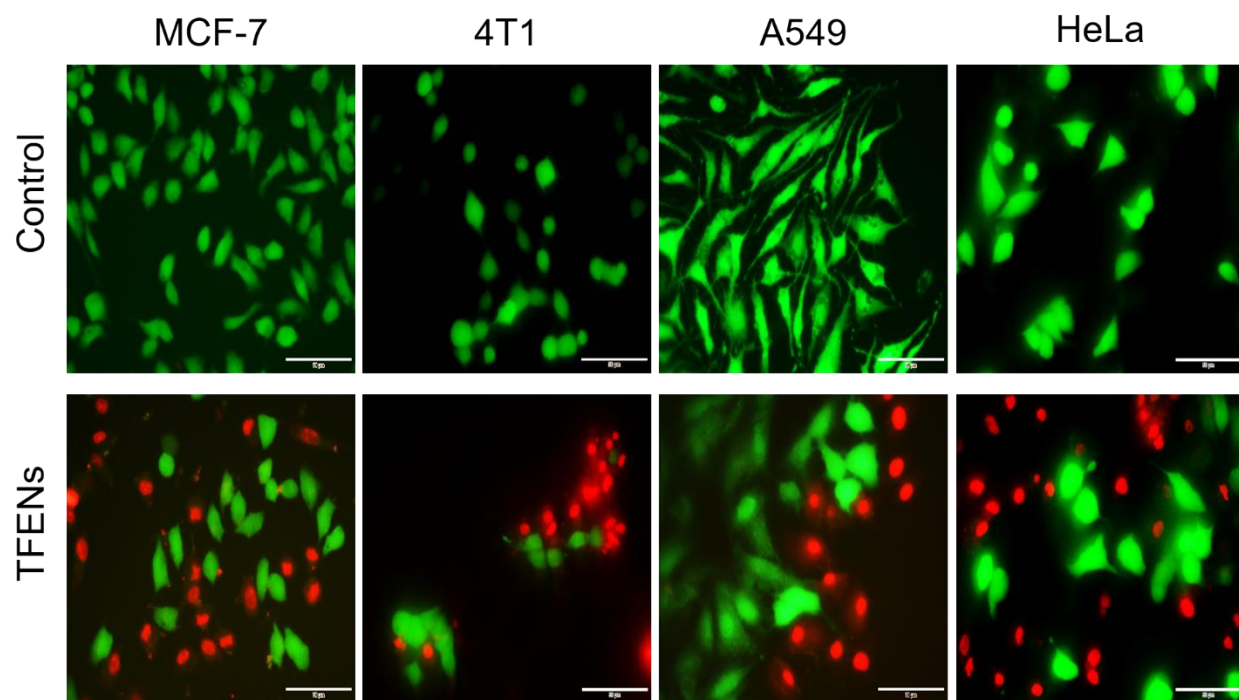


Figure S4 Fluorescence images of TFEN-treated cancer cells with the staining of live/dead viability assay. The green and red dots denote live and dead cells, respectively (scale bar=50 μm).

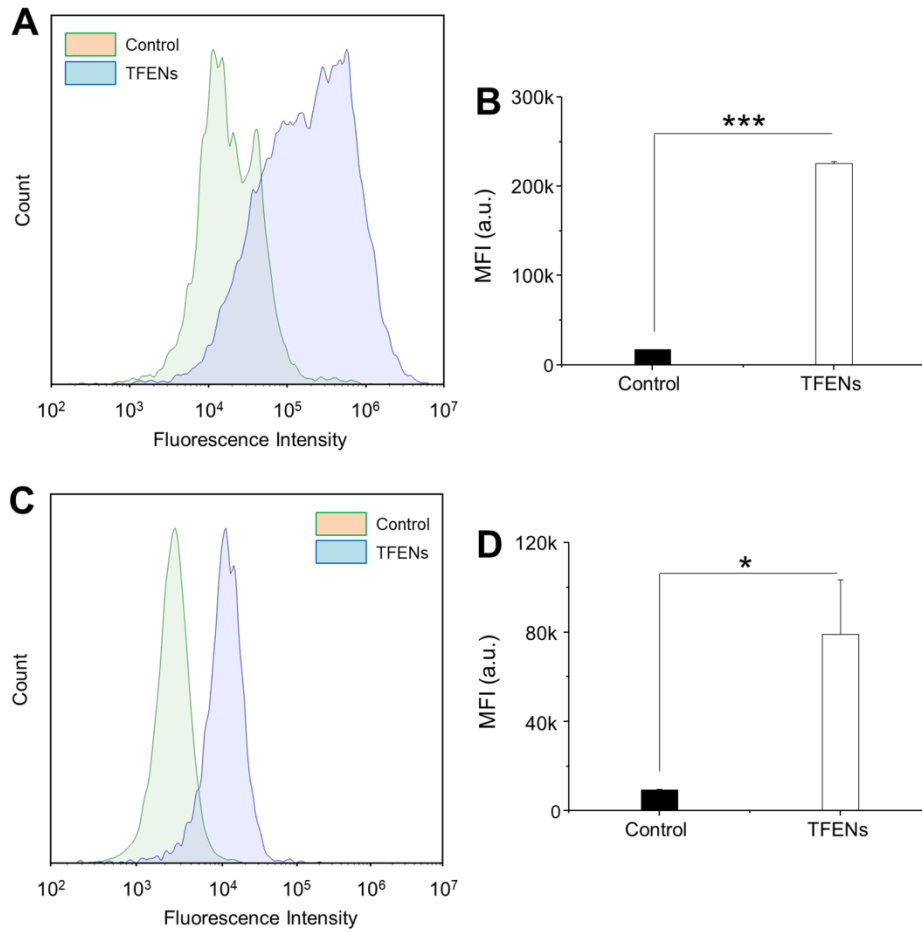


Figure S5 FCM analysis of ROS amounts in (A, B) MCF-7 and (C,D) 4T1 cells after the treatment of TFEVs for 4 h. Each point represents the mean \pm SEM ($n = 3$). * $P < 0.05$, ** $P < 0.01$. ns, no significance).

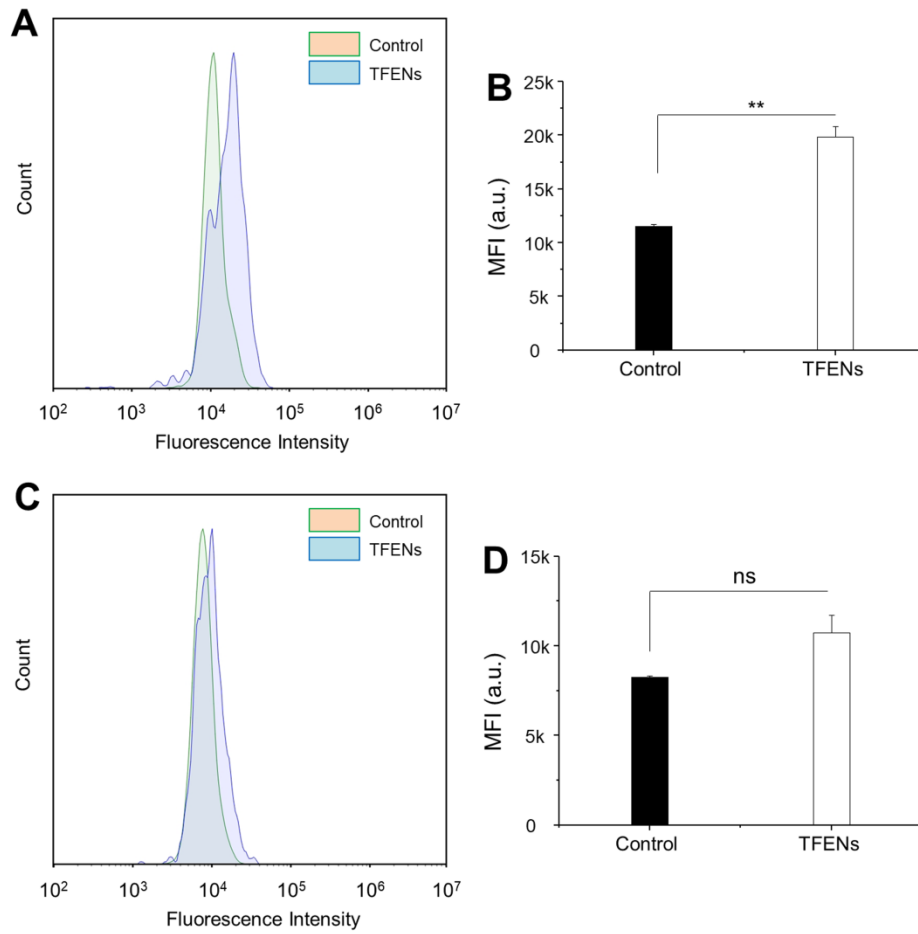


Figure S6 FCM analysis of SA amounts in (A,B) MCF-7 and (C,D) 4T1 cells after the treatment of TFEVs for 4 h. Each point represents the mean \pm SEM ($n = 3$). $*P < 0.05$, $**P < 0.01$. ns, no significance.

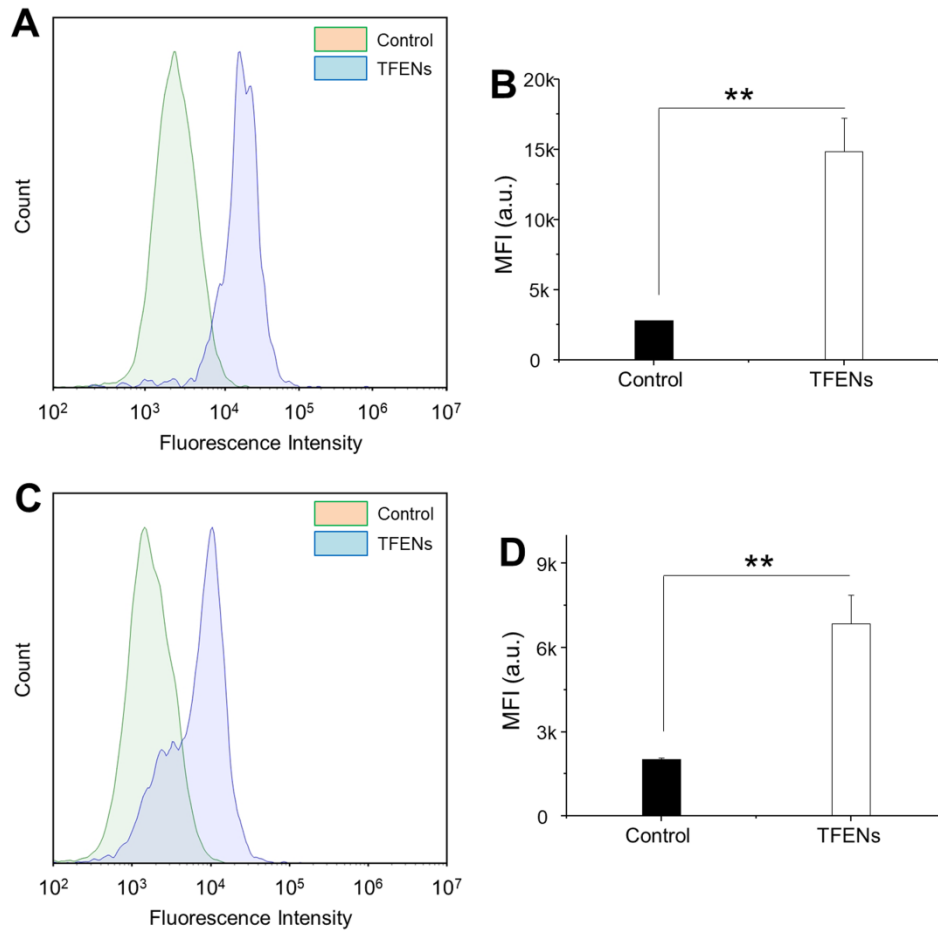


Figure S7 FCM analysis of NO in (A,B) MCF-7 and (C,D) 4T1 cells after the treatment of TFEVs for 4 h. Each point represents the mean \pm SEM ($n = 3$). * $p < 0.05$, ** $p < 0.01$. ns, no significance.

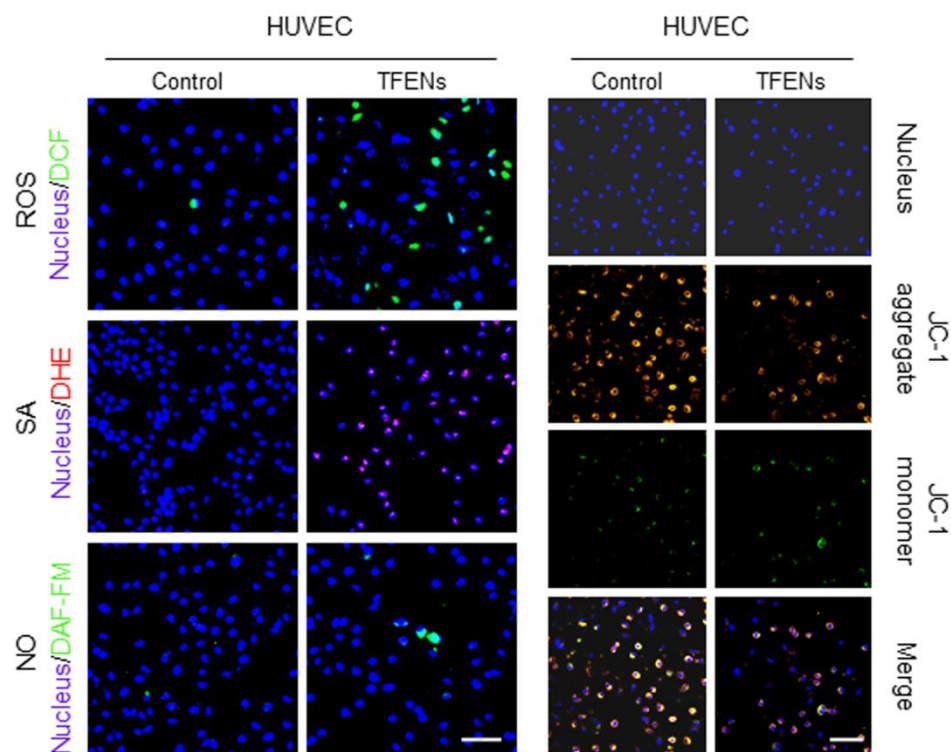


Figure S8 Confocal microscopy images of ROS, SA, NO, and mitochondrial membrane potential changes in HUVEC cells after the treatment of TFENs for 4 h (scale bar: 50 μ m).

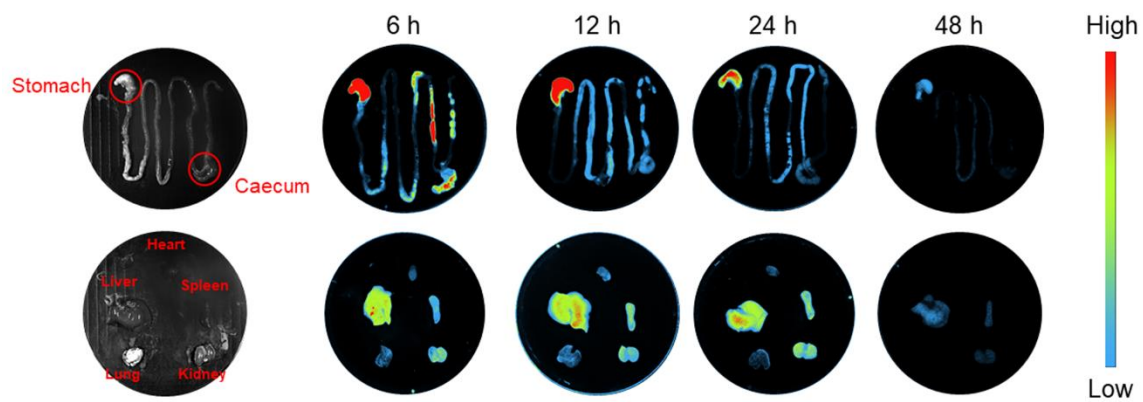
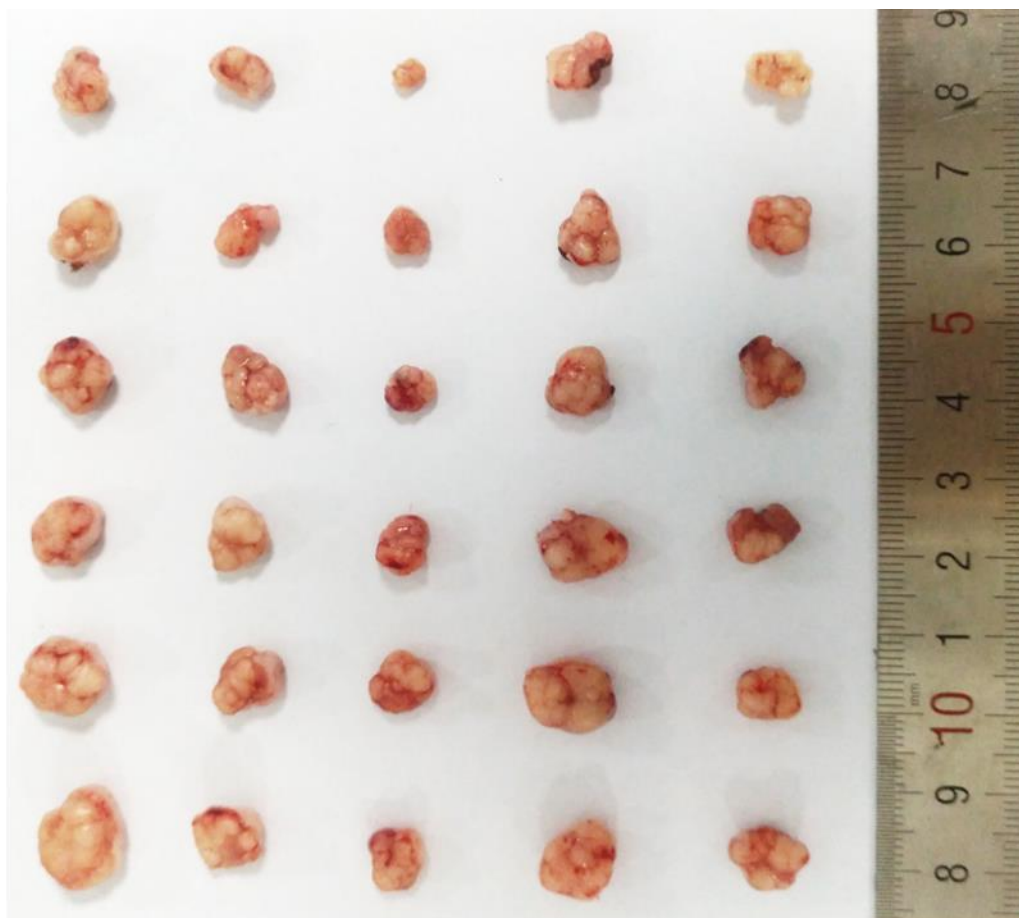


Figure S9 *In vivo* bio-distribution of free DiR in various organs at different time points (6, 12, 24, and 48 h).



Control
TFENS (i.v., low)
TFENS (i.v., high)
TFENS (oral, low)
TFENS (oral, high)

Figure S10 Photographs of the dissected tumor tissues on Day 9.

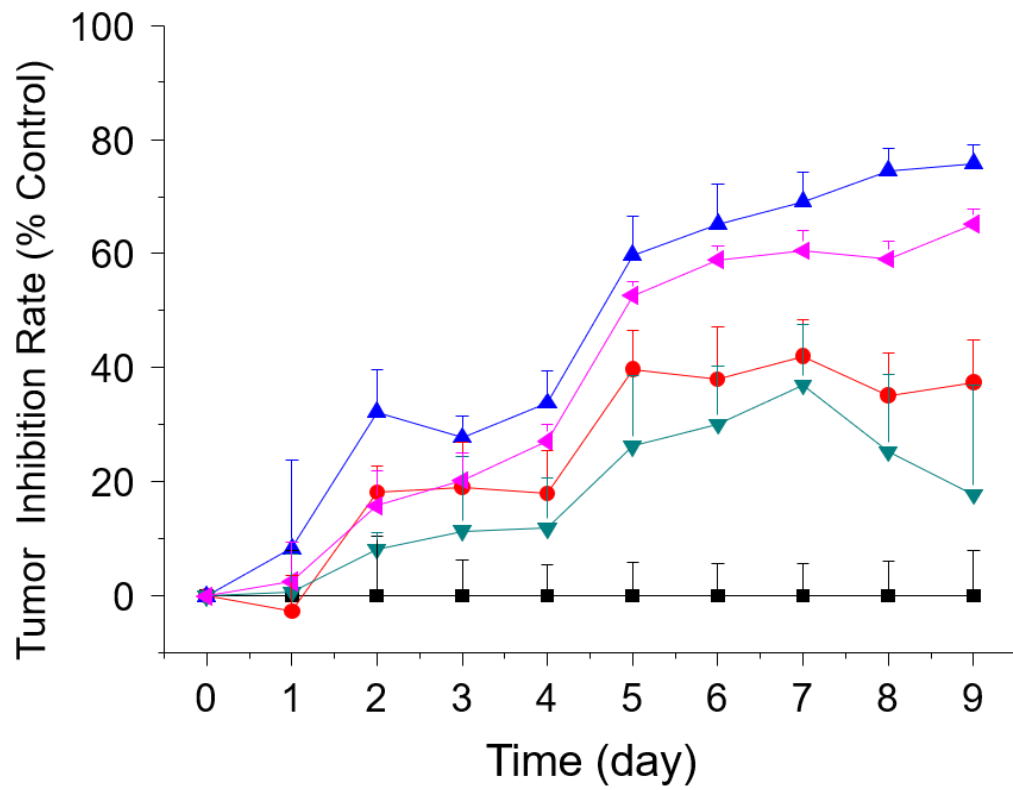


Figure S11 Tumor inhibition rates of different treatment groups at the end of experiments. Each point represents the mean \pm SEM ($n = 5$).

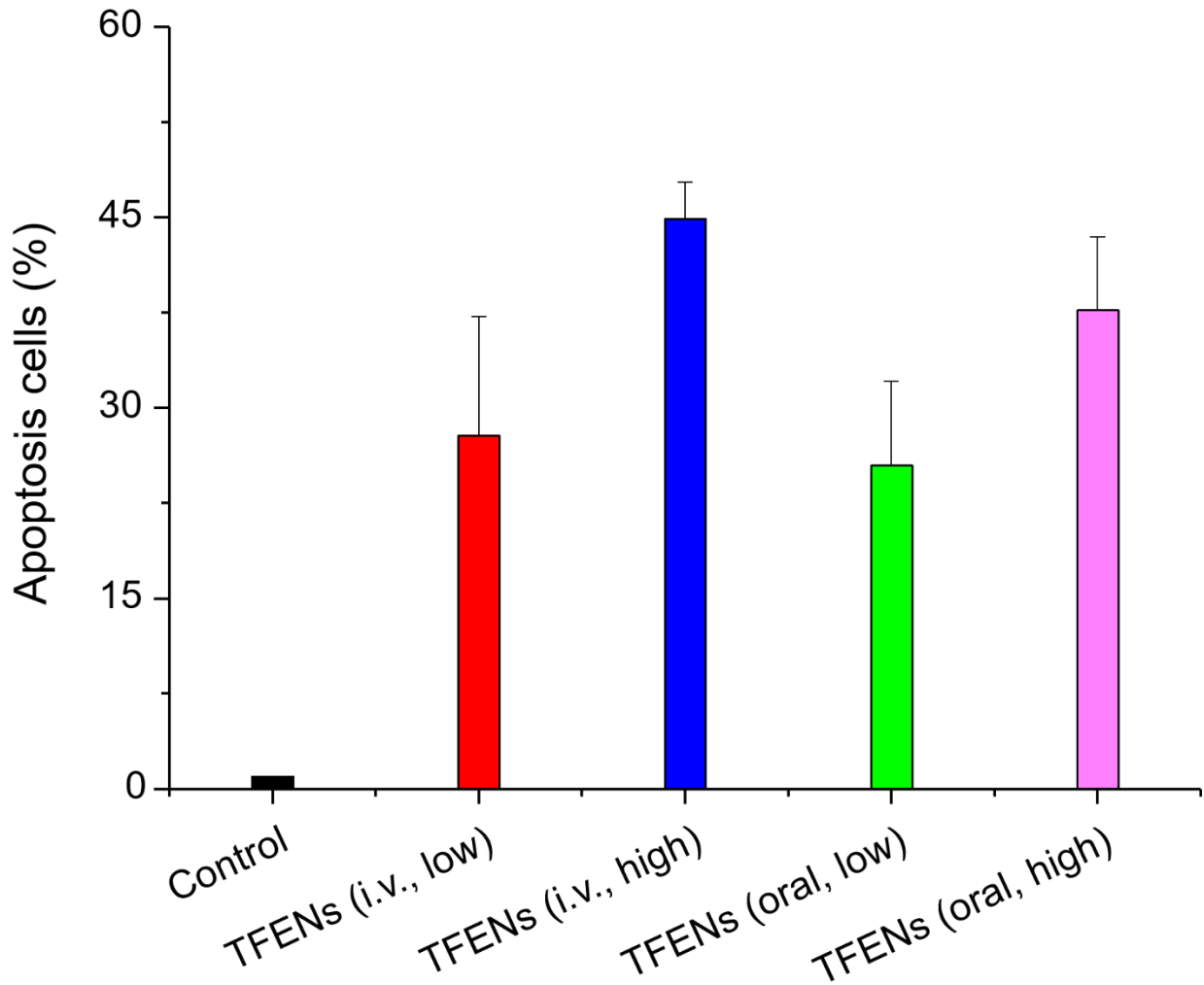


Figure S12 Relative apoptotic cell percentages of tumor tissue sections from different treatment groups at the end of experiments. Each point represents the mean \pm SEM ($n = 3$). * $P < 0.05$, ** $P < 0.01$. ns, no significance.

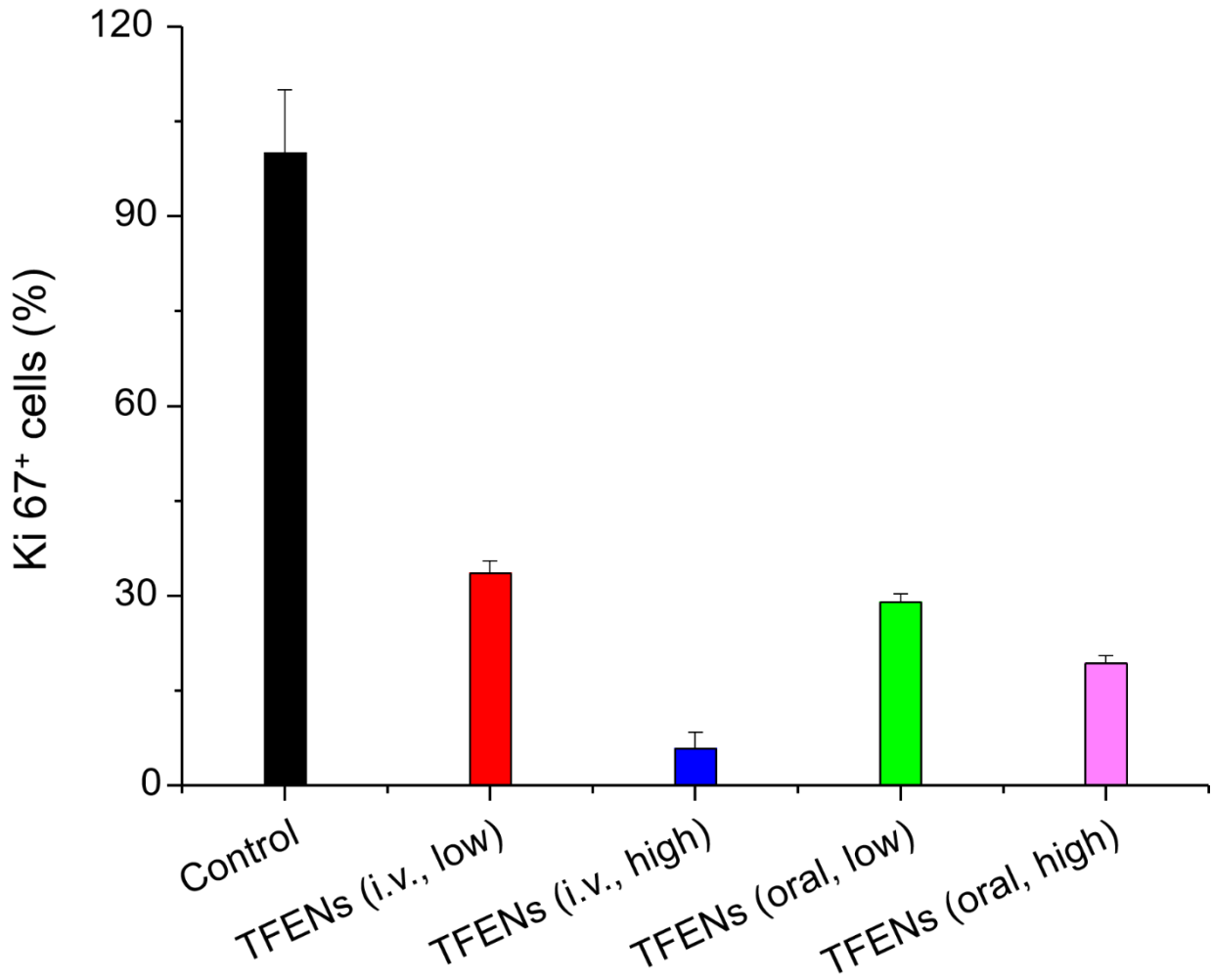


Figure S13 Relative Ki67⁺ cell percentages of tumor tissues sections from different treatment groups at the end of experiments. Each point represents the mean \pm SEM ($n = 3$). * $P < 0.05$, ** $P < 0.01$. ns, no significance.

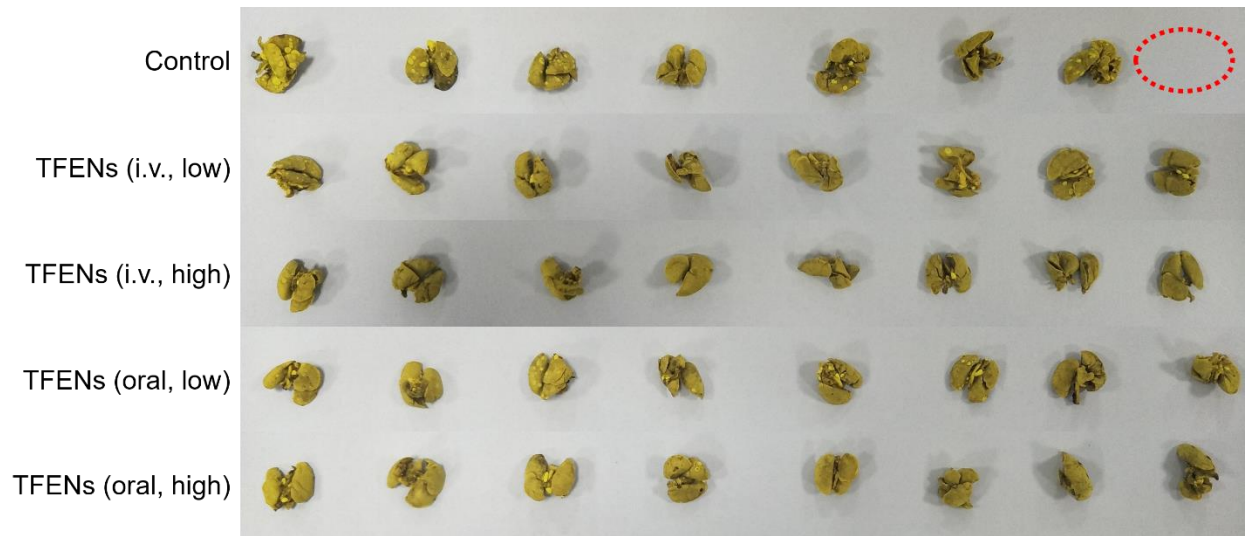


Figure S14 Photograph of the dissected lungs from different treatment groups at the end of experiments.

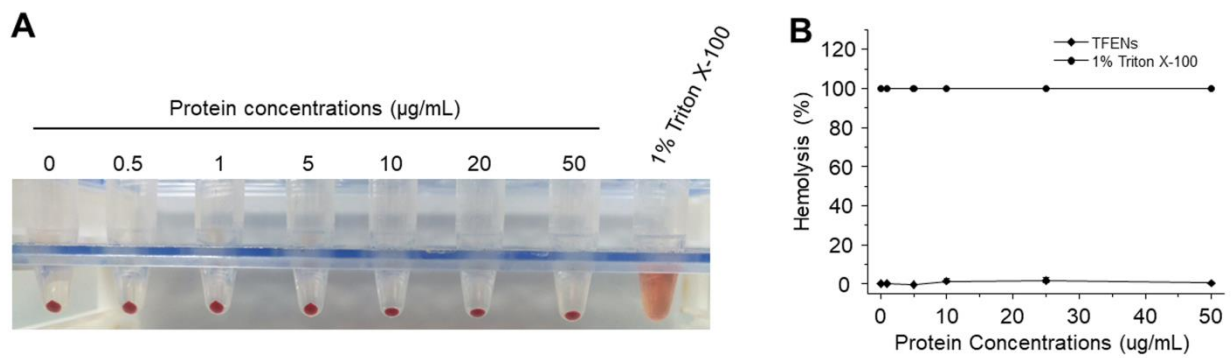


Figure S15 (A) Digital photo and (B) hemolysis rates of erythrocytes after the treatment of Triton X-100 (positive control; 1%, *w/v*), PBS (negative control), and TFEVs under various protein concentrations. Each point represents the mean \pm SEM ($n = 3$).

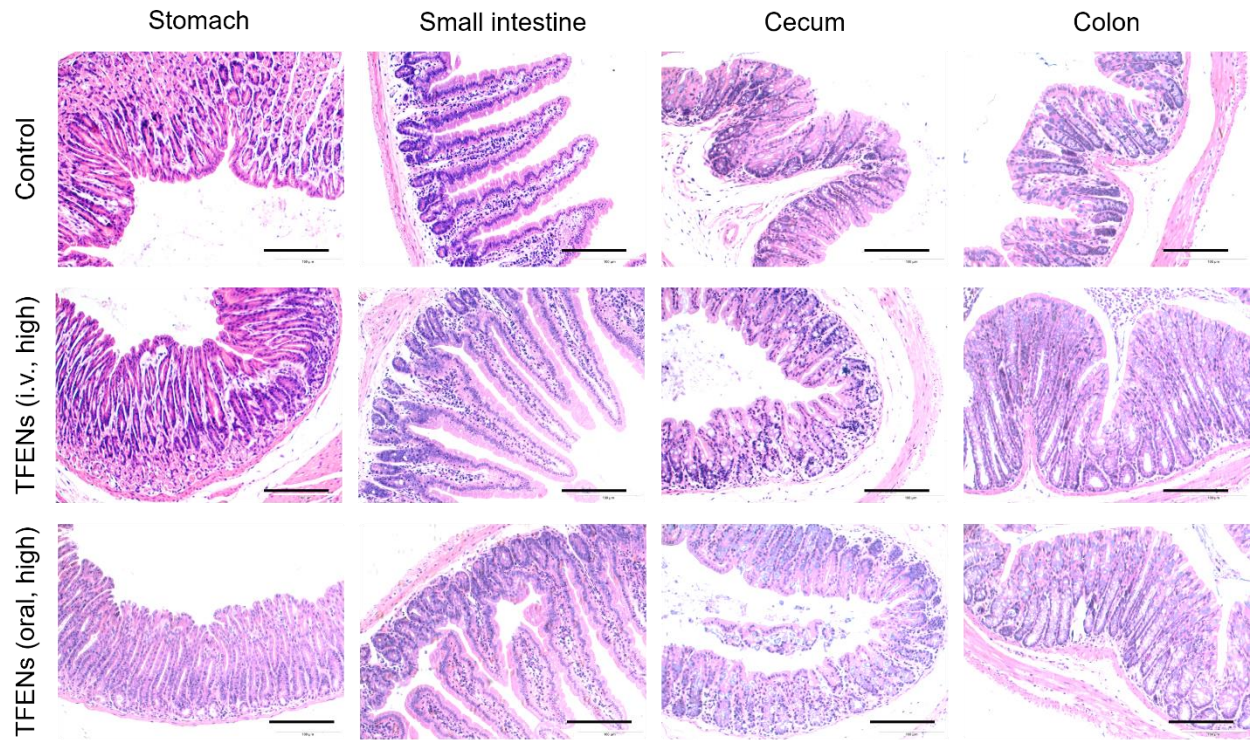


Figure S16 H&E staining of different sections of the GIT (stomach, small intestine, cecum, and colon; scale bar=100 μm).

Table S1 Lipid profiles of TFNPs.

Lipid Ion	Calc. <i>m/z</i>	Ret time (min)	Formula	% of total lipid
Cer(d18:2/16:0+O)+H	552.498	6.7346	C34 H66 O4 N1	0.0087
Cer(d18:2/16:1)+H	534.488	6.6670	C34 H64 O3 N1	0.0951
Cer(d18:2/18:1)+H	562.519	7.4940	C36 H68 O3 N1	0.0340
Cer(d18:2/20:1)+H	590.550	7.9930	C38 H72 O3 N1	0.0042
Cer(d18:2/24:1)+H	646.613	8.9763	C42 H80 O3 N1	0.0138
Cer(d20:2/18:2+O)+H	604.529	8.4977	C38 H70 O4 N1	0.0279
Cer(d22:2/18:2+O)+H	632.561	8.9815	C40 H74 O4 N1	0.0351
Total Cer				0.2189
CerG1(d16:0/18:1+2O)+H	732.562	6.4260	C40 H78 O10 N1	0.0115
CerG1(d18:2/16:0+O)+H	714.551	6.7480	C40 H76 O9 N1	0.0622
CerG1(d18:2/16:1)+H	696.540	6.7726	C40 H74 O8 N1	0.3354
CerG1(d18:2/18:0+O)+H	742.582	7.3858	C42 H80 O9 N1	0.0282
CerG1(d18:2/18:1)+H	724.572	7.4914	C42 H78 O8 N1	0.1209
CerG1(d18:2/20:0+O)+H	770.614	7.9827	C44 H84 O9 N1	0.0038
CerG1(d18:2/20:1)+H	752.603	7.9775	C44 H82 O8 N1	0.0172
CerG1(d18:2/22:1)+H	780.634	8.5056	C46 H86 O8 N1	0.0282
CerG1(d18:2/24:0)+H	810.681	9.1790	C48 H92 O8 N1	0.0107
CerG1(d18:2/24:1)+H	808.666	8.9463	C48 H90 O8 N1	0.0524
CerG1(d18:2/24:2)+H	806.650	8.5277	C48 H88 O8 N1	0.0093

CerG1(d18:2/26:1)+H	836.697	9.3981	C50 H94 O8 N1	0.0139
CerG1(d20:0/18:1+2O)+H	788.624	7.8817	C44 H86 O10 N1	0.0691
CerG1(d20:1/20:1+O)+H	798.645	8.5354	C46 H88 O9 N1	0.0085
CerG1(d22:0/18:0+2O)+Na	840.653	7.8895	C46 H91 O10 N1 Na1	0.0088
CerG1(d22:0/18:1+2O)+H	816.655	8.3997	C46 H90 O10 N1	0.2076
CerG1(d22:0/18:1+O)+H	800.661	8.5003	C46 H90 O9 N1	0.0076
CerG1(d22:0/18:2+2O)+H	814.640	7.8004	C46 H88 O10 N1	0.0177
CerG1(d22:1/20:1+O)+H	826.676	8.9737	C48 H92 O9 N1	0.0216
CerG1(d24:0/18:1+2O)+H	844.687	8.7713	C48 H94 O10 N1	0.1517
CerG1(d24:0/18:1+O)+H	828.692	8.9437	C48 H94 O9 N1	0.0128
CerG1(d24:0/18:2+2O)+H	842.671	8.4283	C48 H92 O10 N1	0.1065
CerG1(d25:0/16:1+2O)+H	830.671	8.5628	C47 H92 O10 N1	0.0248
CerG1(d25:0/18:1+2O)+H	858.702	9.0315	C49 H96 O10 N1	0.0149
CerG1(d25:0/18:2+2O)+H	856.687	8.5970	C49 H94 O10 N1	0.0112
Total CerG1				1.3565
CerP(d12:0/10:0)+H	452.313	4.9160	C22 H47 O6 N1 P1	0.0012
Total CerP				0.0012
CL(18:2/16:0/16:0/20:1)-H	1430.01	7.5121	C79 H147 O17 P2	0.0362
CL(18:2/16:0/16:0/22:4)-H	1451.99	7.5229	C81 H145 O17 P2	0.0277
CL(23:1/16:0/16:0/18:2)-H	1472.05	7.5202	C82 H153 O17 P2	0.0348
CL(9:0/12:0/12:0/16:0)-H	1141.73	9.4554	C58 H111 O17 P2	0.0447
Total CL				0.1434

Co(Q10)+H	863.691	10.6280	C59 H91 O4	0.0714
Co(Q10)+NH ₄	880.717	10.6554	C59 H94 O4 N1	0.0340
Total Co				0.1054
DG(16:0/18:2)+H	593.514	7.2004	C37 H69 O5	0.0218
DG(16:0/18:2)+NH ₄	610.540	8.5576	C37 H72 O5 N1	0.1688
DG(16:0/18:3)+H	591.498	6.7214	C37 H67 O5	0.0755
DG(16:0/18:3)+NH ₄	608.524	8.2755	C37 H70 O5 N1	0.0837
DG(18:0/18:2)+NH ₄	638.571	9.0993	C39 H76 O5 N1	0.0097
DG(18:0/18:3)+NH ₄	636.556	8.7491	C39 H74 O5 N1	0.0070
DG(18:1/18:2)+NH ₄	636.556	8.6165	C39 H74 O5 N1	0.0226
DG(18:1/18:3)+H	617.514	7.3560	C39 H69 O5	0.0111
DG(18:2/18:2)+NH ₄	634.540	8.1939	C39 H72 O5 N1	0.1255
DG(18:3/18:2)+H	615.498	7.7952	C39 H67 O5	0.0694
DG(18:3/18:2)+NH ₄	632.524	7.7785	C39 H70 O5 N1	0.0853
DG(18:3/18:3)+H	613.482	6.4742	C39 H65 O5	0.3057
DG(18:3/18:3)+NH ₄	630.509	7.3586	C39 H68 O5 N1	0.0326
DG(18:4/16:0)+H	589.482	4.8112	C37 H65 O5	0.0010
DG(24:0/18:3)+NH ₄	720.650	10.0035	C45 H86 O5 N1	0.0032
Total DG				1.0231
DGDG(16:0/18:1)+HCOO	963.626	7.6620	C50 H91 O17	0.1259
DGDG(16:0/18:1)-H	917.620	7.6753	C49 H89 O15	0.0246
DGDG(16:0/18:2)+HCOO	961.610	7.2822	C50 H89 O17	1.4550

DGDG(16:0/18:2)-H	915.605	7.2494	C49 H87 O15	0.2921
DGDG(16:0/18:3)+HCOO	959.594	6.8155	C50 H87 O17	0.9202
DGDG(16:0/18:3)-H	913.589	6.7305	C49 H85 O15	0.1911
DGDG(16:0/26:2)+HCOO	1073.73	9.4475	C58 H105 O17	0.1208
DGDG(16:0/26:3)+HCOO	1071.72	9.2080	C58 H103 O17	0.0703
DGDG(16:0/26:3)-H	1025.71	8.6472	C57 H101 O15	0.0611
DGDG(18:0/18:1)+HCOO	991.657	8.2263	C52 H95 O17	0.0171
DGDG(18:0/18:2)+HCOO	989.641	7.7607	C52 H93 O17	0.1797
DGDG(18:0/18:2)-H	943.636	7.7962	C51 H91 O15	0.0271
DGDG(18:0/18:3)+HCOO	987.626	7.3808	C52 H91 O17	0.1355
DGDG(18:0/26:1)-H	1057.77	9.5568	C59 H109 O15	0.0384
DGDG(18:1/18:2)+HCOO	987.626	7.2572	C52 H91 O17	0.1037
DGDG(18:1/18:2)-H	941.620	7.3031	C51 H89 O15	0.0216
DGDG(18:1/18:3)+HCOO	985.610	6.8812	C52 H89 O17	0.3382
DGDG(18:2/18:2)+HCOO	985.610	6.7412	C52 H89 O17	0.3382
DGDG(18:2/18:2)-H	939.605	6.7956	C51 H87 O15	0.0604
DGDG(18:2/18:3)+HCOO	983.594	6.3525	C52 H87 O17	0.1657
DGDG(18:2/18:3)-H	937.589	6.2670	C51 H85 O15	0.0328
DGDG(18:2/20:1)+HCOO	1015.65	7.8318	C54 H95 O17	0.0259
DGDG(18:2/23:0)+HCOO	1059.72	9.0263	C57 H103 O17	0.0316
DGDG(18:2/24:0)+HCOO	1073.73	9.1697	C58 H105 O17	0.2034
DGDG(18:2/25:0)+HCOO	1087.75	9.3924	C59 H107 O17	0.0273

DGDG(18:2/26:0)+HCOO	1101.76	9.5791	C60 H109 O17	0.0356
DGDG(18:2/26:2)+HCOO	1097.7	9.2026	C60 H105 O17	0.1129
DGDG(18:2/28:0)+HCOO	1129.79	9.9529	C62 H113 O17	0.0171
DGDG(18:2/28:5)+HCOO	1119.72	8.6831	C62 H103 O17	0.0173
DGDG(18:3/18:3)+HCOO	981.579	5.8011	C52 H85 O17	0.6447
DGDG(18:3/18:3)-H	935.573	5.7201	C51 H83 O15	0.1231
DGDG(18:3/24:0)+HCOO	1071.72	8.8964	C58 H103 O17	0.0424
DGDG(24:0/24:0)-H	1115.85	10.4209	C63 H119 O15	0.0246
Total DGDG				6.0255
dMePE(16:0/20:4)+H	768.553	7.1142	C43 H79 O8 N1 P1	0.0027
dMePE(18:2/18:2)-H	766.539	7.0509	C43 H77 O8 N1 P1	0.0603
dMePE(18:3/18:2)-H	764.523	6.5598	C43 H75 O8 N1 P1	0.0161
dMePE(20:2/18:2)-H	794.570	8.1986	C45 H81 O8 N1 P1	0.0294
Total dMePE				0.1085
LPC(16:0)+H	496.339	2.2394	C24 H51 O7 N1 P1	0.0015
LPC(18:2)+H	520.33	1.6909	C26 H51 O7 N1 P1	0.0017
Total LPC				0.0032
LPE(16:0)-H	452.278	2.1738	C21 H43 O7 N1 P1	0.0088
LPE(16:0)+H	454.292	2.1962	C21 H45 O7 N1 P1	0.0005
Total LPE				0.0092
MG(21:6)+H	389.268	9.5682	C24 H37 O4	0.0624
Total MG				0.0624

MGDG(16:0/18:1)+HCOO	801.573	8.2013	C44 H81 O12	0.0153
MGDG(16:0/18:2)+HCOO	799.557	7.7277	C44 H79 O12	0.1422
MGDG(16:0/18:3)+HCOO	797.542	7.3203	C44 H77 O12	0.1178
MGDG(18:0/18:3)+HCOO	825.573	7.9580	C46 H81 O12	0.0116
MGDG(18:2/18:2)+HCOO	823.557	7.3308	C46 H79 O12	0.1647
MGDG(18:2/18:3)+HCOO	821.54	6.8864	C46 H77 O12	0.1480
MGDG(18:3/18:3)+HCOO	819.526	6.4105	C46 H75 O12	1.8956
MGDG(18:3/18:3)-H	773.520	6.3960	C45 H73 O10	0.0451
Total MGDG				2.5404
PA(16:0/18:2)+H	673.480	7.5919	C37 H70 O8 N0 P1	0.0098
PA(16:0/18:2)+Na	695.462	8.0349	C37 H69 O8 N0 P1 Na1	0.1073
PA(16:0/18:2)+NH ₄	690.506	7.3105	C37 H73 O8 N1 P1	0.1745
PA(16:0/20:4)+H	697.480	7.1511	C39 H70 O8 N0 P1	0.0251
PA(16:0/20:4)+Na	719.462	6.6722	C39 H69 O8 N0 P1 Na1	0.0776
PA(16:0/20:4)+NH ₄	714.506	6.8680	C39 H73 O8 N1 P1	0.0748
PA(16:1/18:2)+H	671.464	6.9577	C37 H68 O8 N0 P1	0.0530
PA(16:1/18:2)+Na	693.446	6.8238	C37 H67 O8 N0 P1 Na1	0.0257
PA(16:1/18:2)+NH ₄	688.491	6.6696	C37 H71 O8 N1 P1	0.0744
PA(16:1/20:4)+H	695.464	6.3910	C39 H68 O8 N0 P1	0.0535
PA(16:1/20:4)+Na	717.446	6.1788	C39 H67 O8 N0 P1	0.0157

			NaI	
PA(16:1/20:4)+NH ₄	712.491	6.2612	C39 H71 O8 N1 P1	0.0640
PA(16:1/20:5)+H	693.449	5.8157	C39 H66 O8 N0 P1	0.0062
PA(16:1/20:5)+NH ₄	710.475	5.7626	C39 H69 O8 N1 P1	0.0057
PA(16:0/18:2)-H	671.465	7.9953	C37 H68 O8 N0 P1	3.3439
PA(16:0/18:3)-H	669.450	6.6348	C37 H66 O8 N0 P1	1.3177
PA(18:2/18:2)-H	695.465	8.1044	C39 H68 O8 N0 P1	2.3714
PA(18:3/18:2)-H	693.450	6.4730	C39 H66 O8 N0 P1	1.1922
PA(18:3/18:3)-H	691.434	5.7400	C39 H64 O8 N0 P1	0.1727
Total PA				9.1652
PC(15:0/18:2)+H	744.553	7.2057	C41 H79 O8 N1 P1	0.0139
PC(15:0/20:4)+H	768.553	6.7320	C43 H79 O8 N1 P1	0.0113
PC(15:1/18:2)+H	742.538	6.7072	C41 H77 O8 N1 P1	0.0095
PC(15:1/20:4)+H	766.538	6.1815	C43 H77 O8 N1 P1	0.0019
PC(16:0/16:0)+H	734.569	8.0077	C40 H81 O8 N1 P1	0.0073
PC(16:0/16:1)+H	732.553	7.4558	C40 H79 O8 N1 P1	0.0101
PC(16:0/18:1)+H	760.585	8.3664	C42 H83 O8 N1 P1	0.3319
PC(16:0/18:1)+Na	782.567	8.1547	C42 H82 O8 N1 P1 NaI	0.0744
PC(16:0/18:2)+H	758.569	8.2535	C42 H81 O8 N1 P1	5.8974
PC(16:0/18:2)+Na	780.551	7.5241	C42 H80 O8 N1 P1 NaI	1.1396
PC(16:0/19:3)+H	770.569	7.4131	C43 H81 O8 N1 P1	0.0184

PC(16:0/20:4)+H	782.569	7.1064	C44 H81 O8 N1 P1	3.9925
PC(16:0/20:4)+Na	804.551	7.1285	C44 H80 O8 N1 P1 Na1	0.7700
PC(16:0/24:2)+H	842.663	9.6243	C48 H93 O8 N1 P1	0.0120
PC(16:1/16:1)+H	730.538	6.8212	C40 H77 O8 N1 P1	0.0073
PC(16:1/16:2)+H	728.52	6.2741	C40 H75 O8 N1 P1	0.0019
PC(16:1/18:2)+H	756.553	7.5685	C42 H79 O8 N1 P1	1.8708
PC(16:1/18:2)+Na	778.535	7.2173	C42 H78 O8 N1 P1 Na1	0.3365
PC(16:1/20:4)+H	780.553	6.9279	C44 H79 O8 N1 P1	1.4259
PC(16:1/20:4)+Na	802.535	6.7137	C44 H78 O8 N1 P1 Na1	0.0326
PC(16:1/20:5)+H	778.538	6.2664	C44 H77 O8 N1 P1	0.1825
PC(16:1/20:5)+Na	800.520	5.9320	C44 H76 O8 N1 P1 Na1	0.0278
PC(17:0/18:2)+H	772.585	7.8869	C43 H83 O8 N1 P1	0.0114
PC(17:1/18:2)+H	770.569	7.2680	C43 H81 O8 N1 P1	0.0184
PC(18:0/18:2)+H	786.600	8.1846	C44 H85 O8 N1 P1	0.1088
PC(18:0/18:2)+Na	808.582	8.2483	C44 H84 O8 N1 P1 Na1	0.0043
PC(18:0/20:4)+H	810.600	7.6739	C46 H85 O8 N1 P1	0.1040
PC(18:0/24:2)+H	870.694	9.9906	C50 H97 O8 N1 P1	0.0355
PC(18:0e/24:2)+H	856.71	9.7195	C50 H99 O7 N1 P1	0.0553
PC(18:1/18:2)+H	784.585	7.6636	C44 H83 O8 N1 P1	0.8441

PC(18:1/18:2)+Na	806.567	7.6661	C44 H82 O8 N1 P1 Na1	0.1734
PC(18:1/20:4)+H	808.585	7.2251	C46 H83 O8 N1 P1	0.0120
PC(18:1/24:2)+H	868.679	9.5656	C50 H95 O8 N1 P1	0.0278
PC(18:1p/23:0)+H	842.699	9.4304	C49 H97 O7 N1 P1	0.0127
PC(18:2p/23:0)+H	840.684	9.1319	C49 H95 O7 N1 P1	0.0002
PC(19:1/18:2)+H	798.600	7.9628	C45 H85 O8 N1 P1	0.0018
PC(20:0/18:2)+H	814.632	8.8311	C46 H89 O8 N1 P1	0.0213
PC(20:0e/23:3)+H	868.715	10.2308	C51 H99 O7 N1 P1	0.0067
PC(20:1/18:2)+H	812.616	8.3374	C46 H87 O8 N1 P1	0.0400
PC(20:1/18:2)+Na	834.598	8.2664	C46 H86 O8 N1 P1 Na1	0.0114
PC(16:0/18:1)+HCOO	804.576	8.0886	C43 H83 O10 N1 P1	0.4999
PC(16:0/18:2)+HCOO	802.560	7.5912	C43 H81 O10 N1 P1	3.0685
PC(16:0/18:3)+HCOO	800.544	6.9828	C43 H79 O10 N1 P1	0.9623
PC(18:0/18:2)+HCOO	830.591	8.2460	C45 H85 O10 N1 P1	0.1333
PC(18:1/18:1)+HCOO	830.591	8.1124	C45 H85 O10 N1 P1	0.1333
PC(18:1/18:2)+HCOO	828.576	7.5517	C45 H83 O10 N1 P1	0.6124
PC(18:2/18:2)+HCOO	826.560	7.0932	C45 H81 O10 N1 P1	2.1900
PC(18:3/18:2)+HCOO	824.544	6.4809	C45 H79 O10 N1 P1	0.9658
PC(18:3/18:3)+HCOO	822.529	6.0432	C45 H77 O10 N1 P1	0.2230
PC(20:1/18:2)+HCOO	856.607	8.2236	C47 H87 O10 N1 P1	0.0481
PC(20:2/18:2)+HCOO	854.591	7.7409	C47 H85 O10 N1 P1	0.0573

PC(24:0/18:2)+HCOO	914.685	10.0114	C51 H97 O10 N1 P1	0.0541
Total PC				26.6125
PE(16:0/18:1)+H	718.538	7.9275	C39 H77 O8 N1 P1	0.0132
PE(16:0/18:1)+Na	740.520	7.9499	C39 H76 O8 N1 P1 Na1	0.0038
PE(16:0/18:2)+H	716.522	7.5228	C39 H75 O8 N1 P1	1.7225
PE(16:0/18:2)+Na	738.504	7.5750	C39 H74 O8 N1 P1 Na1	0.2441
PE(16:0/20:4)+H	740.522	6.9995	C41 H75 O8 N1 P1	0.5202
PE(16:0/24:2)+H	800.616	9.0641	C45 H87 O8 N1 P1	0.0357
PE(16:0/24:2)+Na	822.598	9.1019	C45 H86 O8 N1 P1 Na1	0.0083
PE(16:1/18:2)+H	714.506	7.1329	C39 H73 O8 N1 P1	0.5384
PE(16:1/18:2)+Na	736.488	7.0238	C39 H72 O8 N1 P1 Na1	0.0509
PE(16:1/20:4)+H	738.506	6.6449	C41 H73 O8 N1 P1	0.1757
PE(16:1/20:4)+Na	760.488	6.5492	C41 H72 O8 N1 P1 Na1	0.0141
PE(16:1/20:5)+H	736.491	5.9943	C41 H71 O8 N1 P1	0.0203
PE(16:1/24:2)+H	798.600	8.7583	C45 H85 O8 N1 P1	0.0079
PE(16:1p/21:6)+Na	754.478	7.5124	C42 H70 O7 N1 P1 Na1	0.0088
PE(17:0/24:2)+H	814.632	9.3100	C46 H89 O8 N1 P1	0.0171
PE(18:0/18:2)+H	744.553	8.0480	C41 H79 O8 N1 P1	0.0098

PE(18:0/18:2)+Na	766.535	8.1182	C41 H78 O8 N1 P1 Na1	0.0023
PE(18:0/20:4)+H	768.553	7.7283	C43 H79 O8 N1 P1	0.0250
PE(18:0/24:2)+H	828.647	9.4810	C47 H91 O8 N1 P1	0.1597
PE(18:0/24:2)+Na	850.629	9.5110	C47 H90 O8 N1 P1 Na1	0.0208
PE(18:1/18:2)+H	742.538	7.5321	C41 H77 O8 N1 P1	0.0756
PE(18:1/20:4)+H	766.538	7.1979	C43 H77 O8 N1 P1	0.0192
PE(18:1/24:2)+H	826.632	9.1868	C47 H89 O8 N1 P1	0.0449
PE(18:2/18:2)+H	740.522	5.4496	C41 H75 O8 N1 P1	0.0316
PE(18:2/18:2)+Na	762.504	5.4650	C41 H74 O8 N1 P1 Na1	0.0141
PE(18:3/18:2)+H	738.506	4.8808	C41 H73 O8 N1 P1	0.0035
PE(18:4/20:5)+H	758.475	6.0372	C43 H69 O8 N1 P1	0.0013
PE(19:0/24:2)+H	842.663	9.7464	C48 H93 O8 N1 P1	0.0120
PE(20:0/18:2)+H	772.585	8.6139	C43 H83 O8 N1 P1	0.0107
PE(20:0/20:4)+H	796.585	8.2561	C45 H83 O8 N1 P1	0.0046
PE(20:0/24:2)+H	856.679	9.9154	C49 H95 O8 N1 P1	0.0078
PE(20:1/18:2)+H	770.569	8.0701	C43 H81 O8 N1 P1	0.0440
PE(16:0/18:1)-H	716.523	7.9423	C39 H75 O8 N1 P1	0.1115
PE(16:0/18:2)-H	714.507	7.4163	C39 H73 O8 N1 P1	4.1970
PE(16:0/18:3)-H	712.492	7.0958	C39 H71 O8 N1 P1	1.4066
PE(16:0/20:4)-H	738.507	7.1719	C41 H73 O8 N1 P1	1.3551

PE(16:0/20:5)-H	736.492	6.6755	C41 H71 O8 N1 P1	0.5459
PE(17:0/18:2)-H	728.523	7.8292	C40 H75 O8 N1 P1	0.0206
PE(18:0/18:2)-H	742.539	8.0437	C41 H77 O8 N1 P1	0.0741
PE(18:1/18:2)-H	740.523	6.0234	C41 H75 O8 N1 P1	0.0355
PE(18:2/18:2)-H	738.507	7.0051	C41 H73 O8 N1 P1	1.3551
PE(18:2/23:0)-H	812.617	9.3068	C46 H87 O8 N1 P1	0.0396
PE(18:3/18:2)-H	736.492	6.6296	C41 H71 O8 N1 P1	0.5459
PE(18:3/18:3)-H	734.476	5.9906	C41 H69 O8 N1 P1	0.0974
PE(18:3/20:2)-H	764.523	7.2046	C43 H75 O8 N1 P1	0.0283
PE(20:0/18:2)-H	770.570	8.5974	C43 H81 O8 N1 P1	0.0696
PE(20:1/18:2)-H	768.554	8.0939	C43 H79 O8 N1 P1	0.3282
PE(20:1/18:3)-H	766.539	7.7528	C43 H77 O8 N1 P1	0.1306
PE(20:2/18:2)-H	766.539	7.6317	C43 H77 O8 N1 P1	0.1306
PE(22:0/18:2)-H	798.601	9.0737	C45 H85 O8 N1 P1	0.1873
PE(22:0/18:3)-H	796.586	8.7469	C45 H83 O8 N1 P1	0.0403
PE(22:1/18:2)-H	796.586	8.6118	C45 H83 O8 N1 P1	0.0563
PE(24:0/18:2)-H	826.633	9.4804	C47 H89 O8 N1 P1	0.3832
PE(24:0/18:3)-H	824.617	9.2000	C47 H87 O8 N1 P1	0.1111
PE(25:0/18:2)-H	840.648	9.7421	C48 H91 O8 N1 P1	0.0238
PE(26:0/18:2)-H	854.664	9.9251	C49 H93 O8 N1 P1	0.0187
Total PE				15.1601
PG(16:0/18:1)+Na	771.514	7.0515	C40 H77 O10 N0 P1	0.0072

			Na1	
PG(16:0/18:2)+Na	769.499	6.5362	C40 H75 O10 N0 P1	
			Na1	0.0194
PG(16:0/18:2)+NH ₄	764.543	6.5440	C40 H79 O10 N1 P1	0.0075
PG(16:1/18:2)+Na	767.483	6.0320	C40 H73 O10 N0 P1	
			Na1	0.0067
PG(16:1/18:2)+NH ₄	762.528	6.0619	C40 H77 O10 N1 P1	0.0024
PG(28:0/16:0)+H	891.704	9.6322	C50 H100 O10 N0 P1	0.0281
PG(28:0/18:2)+H	915.704	9.3151	C52 H100 O10 N0 P1	0.0398
PG(28:0/18:3)+H	913.689	9.0419	C52 H98 O10 N0 P1	0.0294
PG(28:1/16:0)+H	889.689	9.3903	C50 H98 O10 N0 P1	0.0082
PG(28:1/18:2)+H	913.689	9.4888	C52 H98 O10 N0 P1	0.0318
PG(28:1/18:3)+H	911.673	8.7961	C52 H96 O10 N0 P1	0.0151
PEt(16:2/18:2)-H	695.465	6.9696	C39 H68 O8 N0 P1	2.3571
PG(16:0/16:0)-H	721.502	6.9472	C38 H74 O10 N0 P1	0.1057
PG(16:0/16:1)-H	719.486	6.7761	C38 H72 O10 N0 P1	0.0197
PG(16:0/18:1)-H	747.518	7.0129	C40 H76 O10 N0 P1	0.2484
PG(16:0/18:2)-H	745.502	6.4888	C40 H74 O10 N0 P1	0.9917
PG(16:0/18:3)-H	743.486	6.0037	C40 H72 O10 N0 P1	0.5294
PG(16:1/18:1)-H	745.502	6.8089	C40 H74 O10 N0 P1	0.0756
PG(16:1/18:2)-H	743.486	6.3103	C40 H72 O10 N0 P1	0.0191
PG(16:1/18:3)-H	741.471	5.8193	C40 H70 O10 N0 P1	0.0214
PG(18:2/18:2)-H	769.502	6.0811	C42 H74 O10 N0 P1	0.0404

PG(18:3/18:2)-H	767.486	5.6014	C42 H72 O10 N0 P1	0.0192
PG(18:3/18:3)-H	765.471	5.0200	C42 H70 O10 N0 P1	0.0109
PG(37:5/16:0)-H	1005.75	9.4201	C59 H106 O10 N0 P1	0.4270
PG(37:5/18:2)-H	1029.75	9.1723	C61 H106 O10 N0 P1	0.4156
PG(37:6/16:0)-H	1003.73	9.1750	C59 H104 O10 N0 P1	0.2424
Total PG				5.7192
PI(16:0/18:2)+H	835.533	6.3015	C43 H80 O13 N0 P1	0.0109
PI(16:0/18:2)+Na	857.515	6.2989	C43 H79 O13 N0 P1 Na1	0.0131
PI(16:0/18:2)+NH ₄	852.559	6.3314	C43 H83 O13 N1 P1	0.0021
PI(16:0/18:3)+H	833.517	5.7846	C43 H78 O13 N0 P1	0.0095
PI(16:0/20:4)+H	859.533	5.8850	C45 H80 O13 N0 P1	0.0015
PI(16:1/18:2)+Na	855.499	5.8105	C43 H77 O13 N0 P1 Na1	0.0084
PI(16:1/18:2)+NH ₄	850.544	5.8530	C43 H81 O13 N1 P1	0.0021
PI(26:5/18:2)+H	965.611	7.2303	C53 H90 O13 N0 P1	0.0110
PI(34:4/16:0)+NH ₄	1072.77	8.9190	C59 H111 O13 N1 P1	0.0415
PI(16:0/18:1)-H	835.534	6.8286	C43 H80 O13 N0 P1	0.0448
PI(16:0/18:2)-H	833.518	6.3803	C43 H78 O13 N0 P1	0.7320
PI(16:0/18:3)-H	831.502	5.8639	C43 H76 O13 N0 P1	0.3594
PI(18:0/18:2)-H	861.549	6.9881	C45 H82 O13 N0 P1	0.0338
PI(18:0/18:3)-H	859.534	6.5492	C45 H80 O13 N0 P1	0.0196
PI(18:1/18:2)-H	859.534	6.3934	C45 H80 O13 N0 P1	0.0187

PI(18:2/18:2)-H	857.518	5.8442	C45 H78 O13 N0 P1	0.0620
PI(18:3/18:2)-H	855.502	5.2857	C45 H76 O13 N0 P1	0.0401
PI(18:3/18:3)-H	853.487	4.7131	C45 H74 O13 N0 P1	0.0152
Total PI				1.4255
PIP2(18:2/18:2)-H	1017.45	6.5847	C45 H80 O19 N0 P3	0.0173
Total PIP2				0.0173
PMe(18:2/17:2)-H	695.465	6.7226	C39 H68 O8 N0 P1	2.3571
Total Pme				2.3571
PS(18:0/24:2)+H	872.637	14.6234	C48 H91 O10 N1 P1	0.0041
PS(29:4/16:0)+Na	932.635	6.8304	C51 H92 O10 N1 P1 Na1	0.2498
PS(29:4/18:0)+Na	960.666	7.3780	C53 H96 O10 N1 P1 Na1	0.0264
PS(29:4/18:3)+Na	954.619	5.8056	C53 H90 O10 N1 P1 Na1	0.2795
PS(31:5/16:0)+H	936.668	7.6492	C53 H95 O10 N1 P1	0.0289
PS(31:6/16:0)+H	934.653	7.1641	C53 H93 O10 N1 P1	0.4494
PS(31:6/18:1)+H	960.668	7.2576	C55 H95 O10 N1 P1	0.0167
PS(31:6/18:2)+H	958.653	6.7506	C55 H93 O10 N1 P1	0.0850
PS(31:6/22:0)+H	1018.74	8.7740	C59 H105 O10 N1 P1	0.0139
PS(31:6/24:0)+H	1046.77	9.1590	C61 H109 O10 N1 P1	0.0581
PS(18:1/18:2)-H	784.513	7.9528	C42 H75 O10 N1 P1	0.0274
PS(18:2/18:2)-H	782.497	7.4463	C42 H73 O10 N1 P1	0.7445

PS(18:2/20:4)-H	806.497	7.0378	C44 H73 O10 N1 P1	0.1872
PS(18:3/18:2)-H	780.482	7.1469	C42 H71 O10 N1 P1	0.1840
PS(18:3/20:5)-H	802.466	6.0666	C44 H69 O10 N1 P1	0.0073
PS(20:3/18:2)-H	808.513	7.5820	C44 H75 O10 N1 P1	0.0335
PS(20:5/18:2)-H	804.482	6.5439	C44 H71 O10 N1 P1	0.0574
PS(22:3/18:2)-H	836.544	8.0966	C46 H79 O10 N1 P1	0.0833
PS(22:4/18:2)-H	834.529	7.6475	C46 H77 O10 N1 P1	0.0341
PS(24:0/18:2)-H	870.623	14.5720	C48 H89 O10 N1 P1	0.0205
PS(24:2/18:2)-H	866.591	9.0842	C48 H85 O10 N1 P1	0.0495
PS(26:2/18:2)-H	894.623	9.4883	C50 H89 O10 N1 P1	0.1147
Total PS				2.7552
SQDG(10:0/22:0)-H	793.514	6.6071	C41 H77 O12 S1	0.0784
SQDG(10:0/24:1)-H	819.529	6.6782	C43 H79 O12 S1	0.1091
SQDG(10:0/24:2)-H	817.514	6.2867	C43 H77 O12 S1	0.1813
SQDG(10:0/24:3)-H	815.498	5.7710	C43 H75 O12 S1	0.8660
SQDG(10:0/26:3)-H	843.529	6.3987	C45 H79 O12 S1	0.0862
SQDG(10:0/26:4)-H	841.514	5.7867	C45 H77 O12 S1	0.0436
SQDG(10:0/26:5)-H	839.498	5.2161	C45 H75 O12 S1	0.0444
SQDG(10:0/26:6)-H	837.482	4.7350	C45 H73 O12 S1	0.0950
SQDG(16:0/18:3)-H	815.498	7.0785	C43 H75 O12 S1	0.0266
SQDG(16:2/18:2)-H	813.482	6.5243	C43 H73 O12 S1	0.0876
SQDG(17:5/23:2)+HCOO	937.535	8.3677	C50 H81 O14 S1	0.1158

SQDG(18:2/18:5)+HCOO	881.472	6.5465	C46 H73 O14 S1	0.0370
Total SQDG				1.7710
TG(14:0/18:2/18:2)+NH ₄	844.738	10.7764	C53 H98 O6 N1	0.0415
TG(14:0/18:2/18:3)+NH ₄	842.723	10.5199	C53 H96 O6 N1	0.0137
TG(14:0/18:3/18:3)+NH ₄	840.707	10.3065	C53 H94 O6 N1	0.0067
TG(15:0/14:0/16:0)+NH ₄	782.723	11.0752	C48 H96 O6 N1	0.0337
TG(15:0/14:0/16:1)+NH ₄	780.707	10.8697	C48 H94 O6 N1	0.0318
TG(15:0/16:0/16:0)+NH ₄	810.754	11.3016	C50 H100 O6 N1	0.0598
TG(15:0/16:0/16:1)+NH ₄	808.738	11.0700	C50 H98 O6 N1	0.0803
TG(15:0/16:0/18:1)+NH ₄	836.770	11.3147	C52 H102 O6 N1	0.0743
TG(15:0/16:0/24:0)+NH ₄	922.879	12.1691	C58 H116 O6 N1	0.0104
TG(15:0/16:1/16:1)+NH ₄	806.723	10.8724	C50 H96 O6 N1	0.0388
TG(15:0/16:1/18:1)+NH ₄	834.754	11.1100	C52 H100 O6 N1	0.0699
TG(15:0/16:1/24:0)+NH ₄	920.864	11.9977	C58 H114 O6 N1	0.0102
TG(15:0/18:1/18:1)+NH ₄	862.785	11.3398	C54 H104 O6 N1	0.0516
TG(15:0/18:2/18:3)+NH ₄	856.738	10.6958	C54 H98 O6 N1	0.0163
TG(15:1/14:0/16:1)+NH ₄	778.691	10.6411	C48 H92 O6 N1	0.0135
TG(15:1/18:2/18:3)+NH ₄	854.723	10.4622	C54 H96 O6 N1	0.0081
TG(16:0/14:0/14:0)+NH ₄	768.707	10.9052	C47 H94 O6 N1	0.0290
TG(16:0/14:0/16:0)+NH ₄	796.738	11.2990	C49 H98 O6 N1	0.0684
TG(16:0/14:0/16:1)+NH ₄	794.723	10.9324	C49 H96 O6 N1	0.0680
TG(16:0/14:0/23:0)+NH ₄	894.848	11.9898	C56 H112 O6 N1	0.0086

TG(16:0/14:0/24:0)+NH ₄	908.864	12.0739	C57 H114 O6 N1	0.0119
TG(16:0/16:0/16:0)+NH ₄	824.770	11.4489	C51 H102 O6 N1	0.0870
TG(16:0/16:0/16:1)+NH ₄	822.754	11.2102	C51 H100 O6 N1	0.1164
TG(16:0/16:0/17:0)+NH ₄	838.785	11.5981	C52 H104 O6 N1	0.0347
TG(16:0/16:0/18:1)+NH ₄	850.785	11.5602	C53 H104 O6 N1	0.2304
TG(16:0/16:0/18:2)+NH ₄	88.7702	11.3238	C53 H102 O6 N1	0.8270
TG(16:0/16:0/18:3)+NH ₄	846.754	11.0922	C53 H100 O6 N1	0.5589
TG(16:0/16:1/16:1)+NH ₄	820.738	11.0978	C51 H98 O6 N1	0.1060
TG(16:0/16:1/17:0)+NH ₄	836.770	11.4541	C52 H102 O6 N1	0.0743
TG(16:0/16:1/18:1)+NH ₄	848.770	11.4567	C53 H102 O6 N1	0.8270
TG(16:0/16:1/24:0)+NH ₄	934.879	12.1339	C59 H116 O6 N1	0.0193
TG(16:0/17:0/18:1)+NH ₄	864.801	11.5654	C54 H106 O6 N1	0.0300
TG(16:0/17:0/18:3)+NH ₄	860.770	11.1555	C54 H102 O6 N1	0.0313
TG(16:0/17:2/18:2)+NH ₄	858.754	10.9221	C54 H100 O6 N1	0.0262
TG(16:0/18:1/18:1)+NH ₄	876.801	11.4710	C55 H106 O6 N1	0.4403
TG(16:0/18:1/18:2)+NH ₄	874.785	11.2382	C55 H104 O6 N1	0.7186
TG(16:0/18:1/18:3)+H	855.743	11.0453	C55 H99 O6	0.0264
TG(16:0/18:1/22:1)+NH ₄	932.864	11.8966	C59 H114 O6 N1	0.0352
TG(16:0/18:1/24:0)+NH ₄	962.911	12.3180	C61 H120 O6 N1	0.0160
TG(16:0/18:2/18:2)+NH ₄	872.770	11.0043	C55 H102 O6 N1	2.4069
TG(16:0/18:2/18:3)+H	853.728	10.8372	C55 H97 O6	0.0210
TG(16:0/18:2/18:3)+NH ₄	870.754	10.8880	C55 H100 O6 N1	1.7567

TG(16:0/18:2/21:0)+NH ₄	918.848	11.8392	C58 H112 O6 N1	0.0139
TG(16:0/18:2/23:0)+NH ₄	946.879	12.0224	C60 H116 O6 N1	0.0084
TG(16:0/18:2/24:0)+NH ₄	960.895	12.1886	C61 H118 O6 N1	0.0222
TG(16:0/18:3/18:3)+H	851.712	10.6060	C55 H95 O6	0.0120
TG(16:0/18:3/18:3)+NH ₄	868.738	10.6515	C55 H98 O6 N1	0.9137
TG(16:1/14:0/14:1)+NH ₄	764.676	10.4898	C47 H90 O6 N1	0.0081
TG(16:1/14:0/16:1)+NH ₄	792.707	10.7231	C49 H94 O6 N1	0.0340
TG(16:1/14:1/16:1)+NH ₄	790.691	10.5147	C49 H92 O6 N1	0.0083
TG(16:1/16:1/16:1)+NH ₄	818.723	10.7842	C51 H96 O6 N1	0.0365
TG(16:1/16:1/17:1)+NH ₄	832.738	10.9247	C52 H98 O6 N1	0.0236
TG(16:1/18:1/22:0)+NH ₄	932.864	12.0094	C59 H114 O6 N1	0.0352
TG(16:1/18:3/18:3)+NH ₄	866.723	10.3091	C55 H96 O6 N1	0.0170
TG(17:0/18:1/18:1)+NH ₄	890.817	11.6050	C56 H108 O6 N1	0.0151
TG(17:0/18:1/18:2)+NH ₄	888.801	11.3882	C56 H106 O6 N1	0.0188
TG(17:0/18:2/18:2)+NH ₄	886.785	11.1581	C56 H104 O6 N1	0.0258
TG(17:0/18:2/18:3)+NH ₄	884.770	10.9350	C56 H102 O6 N1	0.0249
TG(18:0/16:0/16:0)+NH ₄	852.801	11.6834	C53 H106 O6 N1	0.0405
TG(18:0/16:0/17:0)+NH ₄	866.817	11.8366	C54 H108 O6 N1	0.0114
TG(18:0/16:0/18:0)+NH ₄	880.832	11.8718	C55 H110 O6 N1	0.0193
TG(18:0/16:0/18:1)+NH ₄	878.817	11.7082	C55 H108 O6 N1	0.0721
TG(18:0/18:0/18:1)+NH ₄	906.848	11.9468	C57 H112 O6 N1	0.0254
TG(18:0/18:1/18:1)+NH ₄	904.832	11.7104	C57 H110 O6 N1	0.1198

TG(18:0/18:1/18:3)+NH ₄	900.801	11.3518	C57 H106 O6 N1	0.4198
TG(18:0/18:2/18:3)+NH ₄	898.785	11.1203	C57 H104 O6 N1	0.8293
TG(18:1/18:1/18:1)+NH ₄	902.817	11.4769	C57 H108 O6 N1	0.2772
TG(18:1/18:1/18:2)+NH ₄	900.801	11.2434	C57 H106 O6 N1	0.4198
TG(18:1/18:2/18:2)+NH ₄	898.785	11.0117	C57 H104 O6 N1	0.8293
TG(18:1/18:2/18:3)+NH ₄	896.770	10.8867	C57 H102 O6 N1	1.9962
TG(18:1/18:2/21:0)+NH ₄	944.864	11.8496	C60 H114 O6 N1	0.0048
TG(18:1/18:2/22:0)+NH ₄	958.879	11.9018	C61 H116 O6 N1	0.0282
TG(18:1/18:2/24:0)+NH ₄	986.911	12.1639	C63 H120 O6 N1	0.0099
TG(18:1/22:1/22:1)+NH ₄	1014.94	12.3311	C65 H124 O6 N1	0.0071
TG(18:2/18:2/18:2)+NH ₄	896.770	10.7694	C57 H102 O6 N1	1.9962
TG(18:2/18:2/21:0)+NH ₄	942.848	11.6612	C60 H112 O6 N1	0.0049
TG(18:2/18:2/23:0)+NH ₄	970.879	11.8692	C62 H116 O6 N1	0.0057
TG(18:3/17:1/18:2)+NH ₄	882.754	10.7179	C56 H100 O6 N1	0.0229
TG(18:3/17:2/18:2)+NH ₄	880.738	10.4518	C56 H98 O6 N1	0.0123
TG(18:3/17:3/18:2)+NH ₄	878.723	10.2058	C56 H96 O6 N1	0.0056
TG(18:3/18:2/18:2)+NH ₄	894.754	10.6502	C57 H100 O6 N1	2.4069
TG(18:3/18:2/18:3)+H	875.712	10.3508	C57 H95 O6	0.0124
TG(18:3/18:2/18:3)+NH ₄	892.738	10.4081	C57 H98 O6 N1	1.3004
TG(18:3/18:2/20:2)+NH ₄	922.785	10.8345	C59 H104 O6 N1	0.0978
TG(18:3/18:2/22:1)+NH ₄	952.832	11.3121	C61 H110 O6 N1	0.0506
TG(18:3/18:2/23:0)+NH ₄	968.864	11.6665	C62 H114 O6 N1	0.0082

TG(18:3/18:3/18:3)+NH ₄	890.723	10.1637	C57 H96 O6 N1	0.3867
TG(18:3/18:3/20:2)+NH ₄	920.770	10.6033	C59 H102 O6 N1	0.0362
TG(18:3/18:3/22:1)+NH ₄	950.817	11.1256	C61 H108 O6 N1	0.0237
TG(19:0/18:1/18:3)+NH ₄	914.817	11.4338	C58 H108 O6 N1	0.0074
TG(19:0/18:2/18:3)+NH ₄	912.801	11.2252	C58 H106 O6 N1	0.0198
TG(19:1/18:2/18:3)+NH ₄	910.785	10.9952	C58 H104 O6 N1	0.0084
TG(20:0/18:1/18:2)+NH ₄	930.848	11.7396	C59 H112 O6 N1	0.0582
TG(20:0/18:1/18:3)+NH ₄	928.832	11.6209	C59 H110 O6 N1	0.1654
TG(20:0/18:2/18:3)+NH ₄	926.817	11.3253	C59 H108 O6 N1	0.2190
TG(20:0/18:3/18:3)+NH ₄	924.801	11.2128	C59 H106 O6 N1	0.1848
TG(20:1/18:1/18:2)+NH ₄	928.832	11.4848	C59 H110 O6 N1	0.1654
TG(20:1/18:2/18:3)+NH ₄	924.801	11.0952	C59 H106 O6 N1	0.1848
TG(20:1/18:3/18:3)+NH ₄	922.785	10.9630	C59 H104 O6 N1	0.0978
TG(22:0/18:2/18:2)+NH ₄	956.864	11.7687	C61 H114 O6 N1	0.0719
TG(22:0/18:2/18:3)+NH ₄	954.848	11.6508	C61 H112 O6 N1	0.0633
TG(22:1/18:2/18:2)+NH ₄	954.848	11.5108	C61 H112 O6 N1	0.0633
TG(22:1/18:2/22:1)+NH ₄	1012.92	12.1417	C65 H122 O6 N1	0.0058
TG(24:0/18:2/18:2)+NH ₄	984.895	11.9293	C63 H118 O6 N1	0.0299
TG(24:0/18:2/18:3)+NH ₄	982.879	11.7714	C63 H116 O6 N1	0.0410
TG(24:0/18:3/18:3)+NH ₄	980.864	11.6534	C63 H114 O6 N1	0.0349
TG(24:1/18:2/18:3)+NH ₄	980.864	11.5355	C63 H114 O6 N1	0.0349
TG(24:1/18:3/18:3)+NH ₄	978.848	11.3608	C63 H112 O6 N1	0.0313

TG(25:0/15:0/16:0)+NH ₄	936.895	12.2564	C59 H118 O6 N1	0.0129
TG(25:0/16:0/16:1)+NH ₄	948.895	12.1990	C60 H118 O6 N1	0.0117
TG(25:0/16:0/18:1)+NH ₄	976.926	12.3845	C62 H122 O6 N1	0.0100
TG(25:0/16:0/18:3)+NH ₄	972.895	12.0843	C62 H118 O6 N1	0.0032
TG(25:0/16:1/18:1)+NH ₄	974.911	12.2394	C62 H120 O6 N1	0.0056
TG(26:0/15:0/16:0)+NH ₄	950.911	12.4444	C60 H120 O6 N1	0.0094
TG(26:0/16:0/18:1)+NH ₄	990.942	12.4848	C63 H124 O6 N1	0.0053
TG(26:0/16:1/18:1)+NH ₄	988.926	12.3206	C63 H122 O6 N1	0.0122
TG(26:0/18:2/18:3)+NH ₄	1010.91	11.9702	C65 H120 O6 N1	0.0051
TG(8:0/10:0/10:0)+Na	549.412	7.6257	C31 H58 O6 Na1	0.0064
TG(8:0/8:0/10:0)+Na	521.381	6.9031	C29 H54 O6 Na1	0.0092
TG(8:0/8:0/10:0)+NH ₄	516.425	6.9382	C29 H58 O6 N1	0.0027
TG(8:0/8:0/8:0)+Na	493.350	6.1315	C27 H50 O6 Na1	0.0034
TG(8:0/8:0/8:0)+NH ₄	488.394	6.1564	C27 H54 O6 N1	0.0008
Total TG				23.4192

Table S2 Protein profiles of TFEVs.

Accession number	PTM	Description
AJA40947.1		3-Dehydroquinate dehydratase/shikimate dehydrogenase 2
AEC11023.1		40S ribosomal protein s9 partial
AEC11018.1		60S acidic ribosomal protein p2 partial
AEC11014.1		60S ribosomal protein L9 partial
ADY38689.1	Oxidation (M)	Actin
ASR73783.1	Acetylation (N-term)	Acyl-CoA oxidase 3
AEC10987.1	Oxidation (M)	Acyl-CoA-binding protein
AMR43300.1		Alanine aminotransferase 1
AEC10992.1	Acetylation (N-term)	Alcohol dehydrogenase
ABE01246.1		Alpha tubulin
ABC59068.2		Alpha tubulin 1
ACF39902.1	Acetylation (N-term); Oxidation (M)	Aquaporin
AGD98716.1		Aquaporin protein 13
AHJ09607.1		Aquaporin protein 26
AGD98711.1		Aquaporin protein 8
AGG39696.1	Acetylation (N-term)	Aquaporin protein AQU18
AHB32107.1	Carbamidomethylation; Acetylation (N-term)	Arginyl-tRNA synthetase-like protein

AKP06507.1		Ascorbate peroxidase
AHI54569.1		Ascorbate peroxidase
AUZ41890.1		Ascorbate peroxidase
AHB32105.1	Carbamidomethylation	Aspartic proteinase
AAW57451.1		ATP synthase alpha subunit partial
ADM92640.1		ATP synthase CF1 beta subunit partial
ADV04491.1	Oxidation (M)	Beta-actin
AHG94612.1		Beta-galactosidase
AHC32021.1		Beta-galactosidase 3
ARU79079.1		Beta-glucosidase 1 GH3 family
ARU79080.1		Beta-glucosidase 2 GH3 family
CAK97604.2		Beta-glucosidase-like protein partial
ADN27527.1		Caffeic acid <i>O</i> -methyltransferase
ABP98983.1	Acetylation (<i>N</i> -term); Oxidation (M)	Caffeine synthase
ACF93134.1	Carbamidomethylation; Acetylation (<i>N</i> -term); Oxidation (M)	Calmodulin
AFF59215.1		Cell division cycle protein 48
ADZ28513.1		Chalcone isomerase
AHB32112.1		Chalcone isomerase
AAO43480.1		Chalcone synthase partial

AVA07274.1		Chlorophyll A/B binding protein 1
AVA07275.1	Carbamidomethylation	Chlorophyll A/B binding protein 2
AFI98390.1		Chloroplast stroma ascorbate peroxidase
AEE69007.1		Cinnamyl alcohol dehydrogenase 1
AEE69008.1		Cinnamyl alcohol dehydrogenase 3
ANN22404.1		Citrate synthase 1
AET97662.2		Copper amine oxidase
AKN10570.1		Copper/zinc-superoxide dismutase 1a
ACJ06541.1	Oxidation (M)	Cyclophilin
ABI33223.1	Oxidation (M)	Cyclophilin
BAU24784.1		CYP74A51
BAU24783.1		CYP74B24
ACN85343.1	Carbamidomethylation	Cystatin
AEC11004.1		Cytochrome b5
ALE65998.1		Cytochrome b5
ALM30765.1		Cytochrome P450 704C1-like protein
ANN22405.1		Cytosolic malate dehydrogenase
ADK47516.1		Cytosolic malate dehydrogenase
ACT10283.1		Dehydrin
ACJ65691.1	Acetylation (N-term)	Dehydrin
AEW24434.1	Oxidation (M)	Dehydrin 1

ATE88060.1		Dehydrin protein	
AHB11191.1		Dehydroascorbate reductase	
APC65299.1	Carbamidomethylation, Acetylation (<i>N</i> -term), Oxidation (M)	Enolase	
AGH32913.1		Enoyl-[acyl-carrier-protein] reductase	
AET97661.1		Eukaryotic translation initiation factor 5A4	
AIL29217.1		Fatty acid beta-oxidation multifunctional protein	
AHE93349.1		Fructokinase	
ANR94268.1		Fructokinase 1	
AVX33438.1	Oxidation (M)	Fructose -1 6-bisphosphate aldolase	
AEH04657.1		Fructose-bisphosphate aldolase	
AGB05601.1		Fructose-bisphosphate aldolase 4	
ARO35914.1		GAD1	
AHC32018.1		Galactokinase 1	
AGI78462.1		GDP-mannose-3',5'-epimerase	
ARQ80482.1		Germin-like protein	
AFE56212.1	Acetylation (<i>N</i> -term)	Glutathione peroxidase	
AEC10977.1	Acetylation (<i>N</i> -term)	Glutathione peroxidase	
AGH32906.1		Glyceraldehyde-3-phosphate partial	dehydrogenase
AHL69785.1	Carbamidomethylation,	Heat shock protein	

Oxidation (M)		
AEC11021.1		Heat shock protein 90 partial
AHB32106.1		Hexokinase
AFP19448.1		Hexose transporter
AEC10950.1		Histone H2A
AEC10951.1	Oxidation (M)	Histone H2B.2
AEC10949.1		Histone H4
AFQ98370.1		Hydroxymethylbutenyl diphosphate synthase
AEC11027.1		Hypothetical protein
AEC11000.1		Hypothetical protein
AEC10969.1		Hypothetical protein
AEC10970.1		Hypothetical protein partial
AMQ81181.1		Isopentenyl diphosphate isomerase
AET97664.1		Late embryogenesis abundant protein
ACH87174.1		Late embryogenesis abundant protein
AEW24432.1		Late embryogenesis abundant protein 3L-1
ADO51752.1		Lipoxygenase
AWI98010.1		Lipoxygenase 6
AIL29212.1		Malonyl-CoA:ACP transacylase
AAT68778.2		Manganese superoxide dismutase
AEO86798.1	Acetylation (N-term)	Methionine synthase

ACH87167.1	Carbamidomethylation	Monodehydroascorbate reductase
ADK77879.1		Nucleoside diphosphate kinase
AEC10975.1		Nucleoside diphosphate kinase 1
AEN02470.1		Oxygen-evolving enhancer protein
AOF40601.1		Peptidase S10
ASU87402.1	Oxidation (M)	Phenylalanine ammonia-lyase
ASG81459.1	Oxidation (M)	Phenylalanine ammonia-lyase
AFS33110.1		Phosphate transporter
AWH66263.1		Phosphate transporter protein 1 partial
AEC10983.1		Phosphatidylglycerol/phosphatidylinositol transfer protein precursor
AJK29839.1	Acetylation (<i>N</i> -term)	Phosphoenolpyruvate/phosphate translocator partial
AGH32905.1		Phosphoglycerate kinase partial
YP_009457943.1		Photosystem I P700 apoprotein A2
YP_009047932.1		Photosystem I P700 chlorophyll A apoprotein A1
AEC11063.1		Photosystem I reaction center subunit iv b partial
AEC11003.1		Photosystem I reaction center subunit N
AIG61444.1		Photosystem II cytochrome b559 alpha subunit
ASM42254.1		Photosystem II Qb protein D1
ABE01395.1		Phragmoplastin

ANT95298.1		Plasma membrane H ⁺ -ATPase partial
ACE06753.1		Plastid acyl carrier protein
ABM66381.1	Acetylation (<i>N</i> -term)	Pollen coat-like protein
BAA34937.1		PR-1 like protein
ANN22410.1		Purple acid phosphatase 26
ANN22411.1	Carbamidomethylation	Purple acid phosphatase 29
ACV60359.1		Putative glucose-6-phosphate/phosphate translocator
BAM28753.1		Putative peroxidase partial
ACV60361.2	Carbamidomethylation	Putative type 2 ribosome-inactivating protein
ANN22403.1		Pyrophosphate-energized vacuolar membrane proton pump 1
AKQ62850.1		Raffinose synthase 1
ACV60360.1		RD22-like protein
AEC10961.1		Ribosomal protein s28
AAL60364.1		Ribulose-1 5-bisphosphate carboxylase/oxygenase large subunit partial
CAB83039.1		<i>S</i> -Adenosylmethionine synthetase
AEC11046.1		<i>S</i> -Adenosylmethionine synthetase 1 partial
ACN76858.1		Seed ripening regulated protein
ACH87168.1		Senescence-related protein
AIL29794.1		Short-chain dehydrogenase-like protein

AKQ62964.1		Sucrose non-fermenting-1-related protein kinase 2.8
AHE93347.1		Sucrose phosphate synthase 1
AHL29281.1	Acetylation (<i>N</i> -term)	Sucrose synthase 1
AHL29282.1		Sucrose synthase 2
ALE20417.1		Sulfate transporter 3.5
AFE56211.1		Terpene synthase
ANB66346.1	a	Terpene synthase 3
ABE01396.1		Thaumatococcus-like protein
AGH33875.1		Transketolase
AGH32904.1		Translation elongation factor 1-alpha partial
ADY38691.1		Ubiquinol-cytochrome <i>c</i> reductase complex
AEC10952.1		Ubiquitin fusion protein
AIF73143.1	Acetylation (<i>N</i> -term)	Ubiquitin-like family protein
AEH04658.1		UDP-glucuronate decarboxylase
ALO19883.1		UDP-glycosyltransferase 91Q1
AUP37380.1		UDP-L-rhamnose synthase partial
CAY32869.1	Oxidation (M)	Unnamed protein product
CBN69845.1		Unnamed protein product
ADY38690.1		Vacuolar ATP synthase subunit
ARE30654.1		Vacuolar invertase INV9

Table S3 Evaluation of the standard hematology markers for mice receiving various treatments.

Name?	Health control	TFEPs (i.v., high)	TFEPs (oral, high)
WBC ($10^9/L$)	3.84 ± 0.54	4.82 ± 0.82	4.16 ± 0.29
Lymph ($10^9/L$)	2.56 ± 0.71	3.82 ± 0.81	3.14 ± 0.21
Mon ($10^9/L$)	0.12 ± 0.02	0.14 ± 0.02	0.14 ± 0.02
Gran ($10^9/L$)	0.76 ± 0.07	0.86 ± 0.11	0.88 ± 0.08
RBC ($10^{12}/L$)	7.58 ± 0.20	6.96 ± 0.26	8.16 ± 0.37
HGB (g/L)	109.40 ± 2.69	96.80 ± 3.97	119.8 ± 4.76
HCT (%)	37.18 ± 0.96	33.36 ± 1.30	40.32 ± 1.57
MCV (fL)	49.10 ± 0.38	48.02 ± 0.36	49.58 ± 0.57
MCH (pg)	14.40 ± 0.17	13.86 ± 0.18	14.68 ± 0.18
MCHC (g/L)	293.80 ± 1.59	287.80 ± 3.01	296.60 ± 1.21
PLT ($10^9/L$)	829.80 ± 61.29	1033.60 ± 150.79	843.40 ± 26.33
MPV (fL)	5.84 ± 0.15	6.50 ± 0.15	5.86 ± 0.12

Data representative mean \pm S.E.M. ($n=5$).

TFENs, exosome-like NPs from tea flowers; i.v., intravenous injection; WBC, white blood cell count; Lymph, lymphocyte; Mon, monocytes; Gran, neutrophilicgranulocyte; RBC, red blood cell; HGB, hemoglobin; HCT, hematocrit; MCV, mean corpuscular volume; MCH, mean corpuscular hemoglobin; MCHC, mean corpuscular hemoglobin concentration; PLT, platelet count; MPV, mean platelet volume.