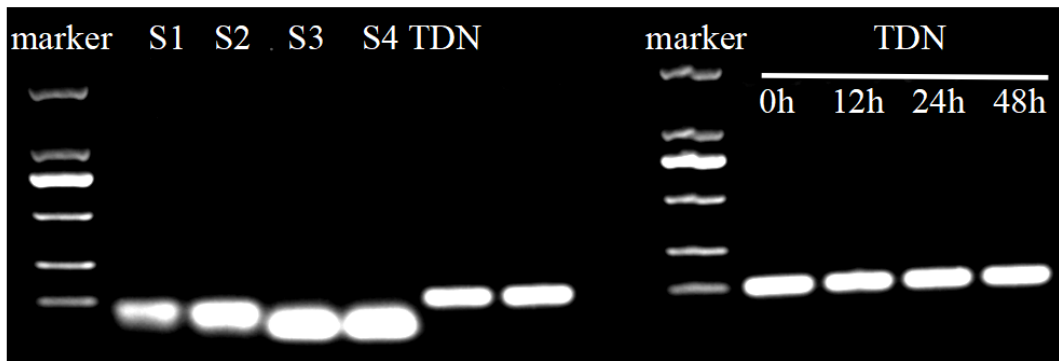
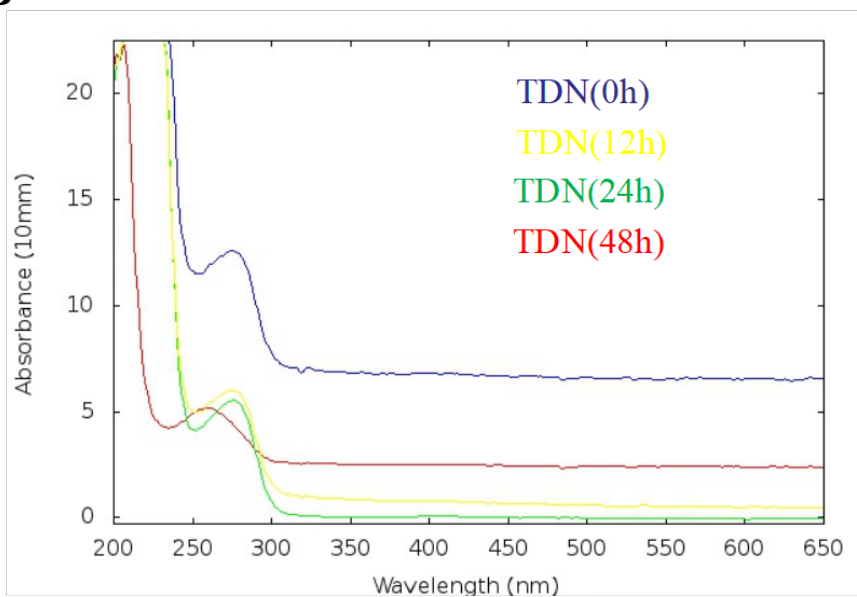


Supplementary Figure 1. Ultrasonic identification and hemodynamic assessment of the inferior vena cava (IVC) and abdominal aorta (AA).

(A) Color Doppler imaging distinguishing the IVC from the AA. The IVC exhibits slower, darker blood flow signals, while the AA displays brighter, pulsatile flow.

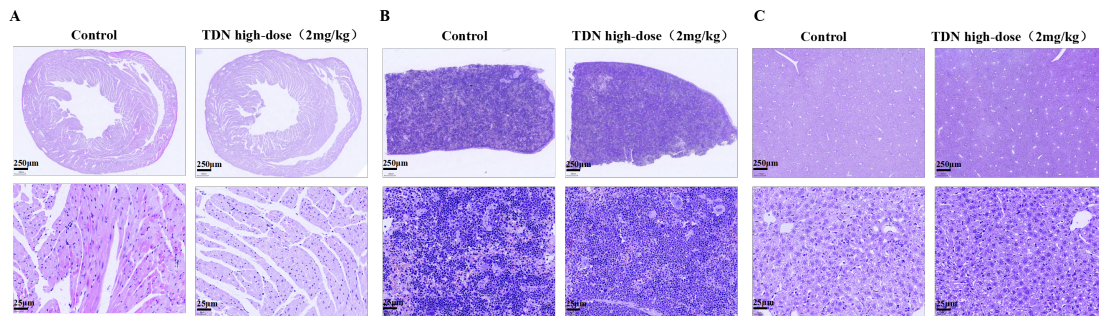
(B) Pulsed-wave (PW) Doppler confirming pulsatile arterial flow within the AA.

A**B****Supplementary Figure 2. Stability evaluation of TDNs under physiological conditions.**

TDNs were incubated in PBS at 37 °C with 10% FBS for up to 48 hours to simulate in vivo fluid environment.

(A) Agarose gel electrophoresis confirming successful synthesis of TDNs: four ssDNA strands (S1–S4, 1 μ M each) were annealed in TM buffer (10 mM Tris-HCl, 5 mM MgCl₂, pH 8.0) by denaturation at 95°C for 10 min followed by rapid cooling to 4°C. Electrophoresis was performed at 120 V for 30 min.

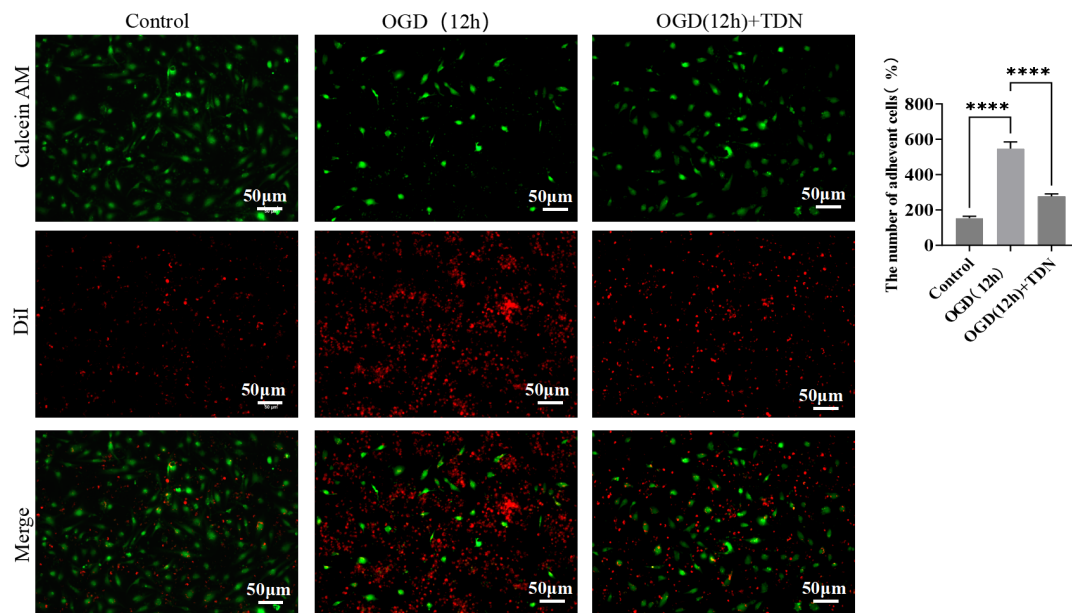
(B) UV-Vis absorption spectra of TDNs: samples were measured using an Implen NanoPhotometer® N50 after incubation with serum for 0, 12, 24, and 48 h. A strong absorption peak was observed in the 250–300 nm range.



Supplementary Figure 3. Histopathological assessment of major organ toxicity after TDN administration.

Mice were treated with TDNs (2 mg/kg) via tail vein injection for 14 days. Organs were harvested, fixed, sectioned, and stained with H&E.

(A) Heart tissue. (B) Spleen tissue. (C) Liver tissue. No significant histological abnormalities were observed.



Supplementary Figure 4. Evaluation of macrophage adhesion to endothelial cells under OGD/R conditions.

Vascular endothelial cells were labeled with Calcein-AM (green) and subjected to OGD for 12 h, then co-cultured with DiI-labeled THP-1 macrophages (red).

The left panel shows representative fluorescence images of adhered THP-1 cells on endothelial monolayers. The right panel provides quantitative analysis of macrophage adhesion presented as the ratio of THP-1 cells to endothelial cells. Data are shown as mean \pm SEM; **** $p < 0.001$.