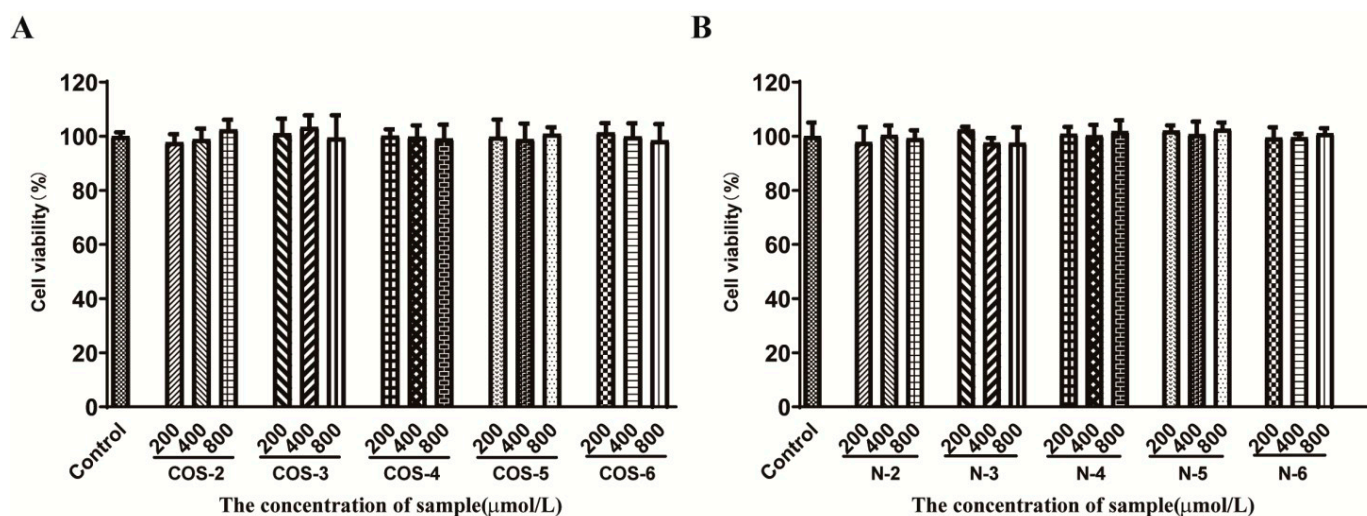**Figure S1.** The cytotoxicity of COSs, NACOs and PACOs in ARPE-19 cell. The cells were treated with 1 mM COSs or NACOs (A) or 10, 100, 500, 1000 μM PACOs (B) for 24 h. Cell viability was analyzed using the MTT method. Values are mean ± SD of five separate experiments. **$p < 0.01$ vs. control.

Figure S2. Effects of COSs and NACOs on the proliferation of ARPE-19 cells. The cells were treated with 200, 400, 800 μM COSs (A) or NACOs (B) for 48 h. Cell viability was analyzed using the MTT method. Values are mean ± SD of five separate experiments.
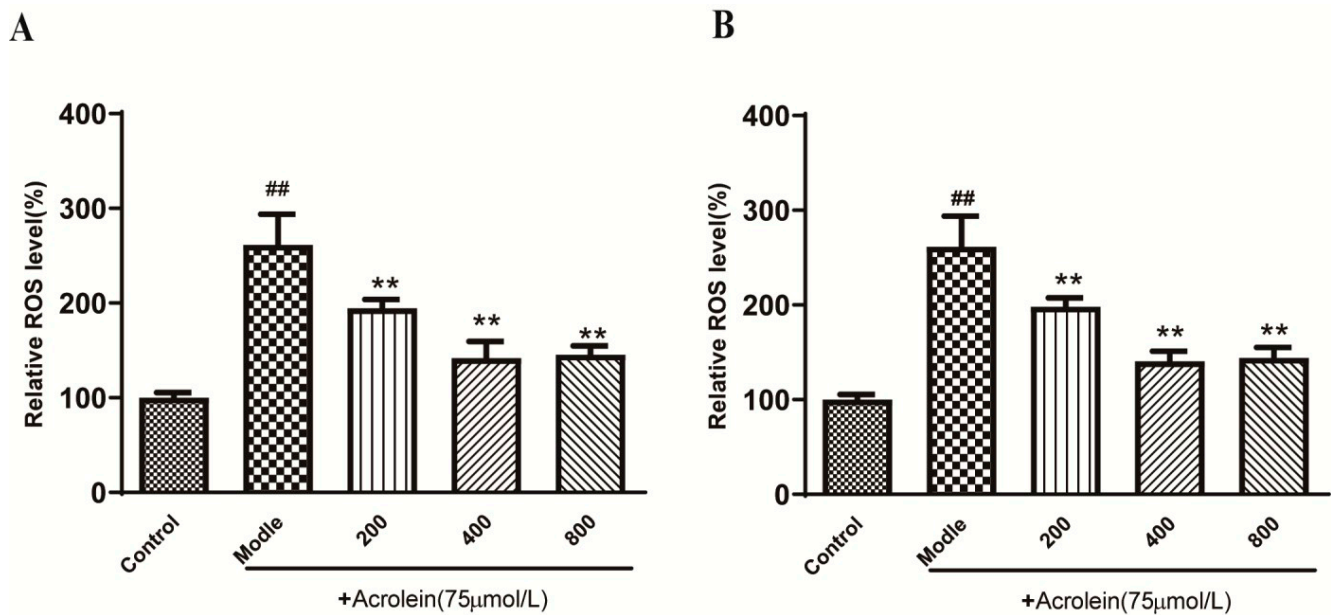
Figure S3. COS-5 and **N-5** against acrolein-induced oxidative stress. ARPE-19 cells were treated with 200, 400, 800 µM **COS-5** (A) or **N-5** (B) for 48 h and then treated with acrolein for additional 24 h. Cellular ROS generation in PRE cells was determined by the 2', 7'-dichlorofluorescein diacetate (DCFH-DA) method. The data expressed as ratio relative to controls. Values are mean ± SD of three separate experiments. ${}^{\#\#}p$ <0.01 vs. control (no acrolein, no **COS-5** and **N-5**); *p <0.05, **p < 0.01 vs. acrolein.
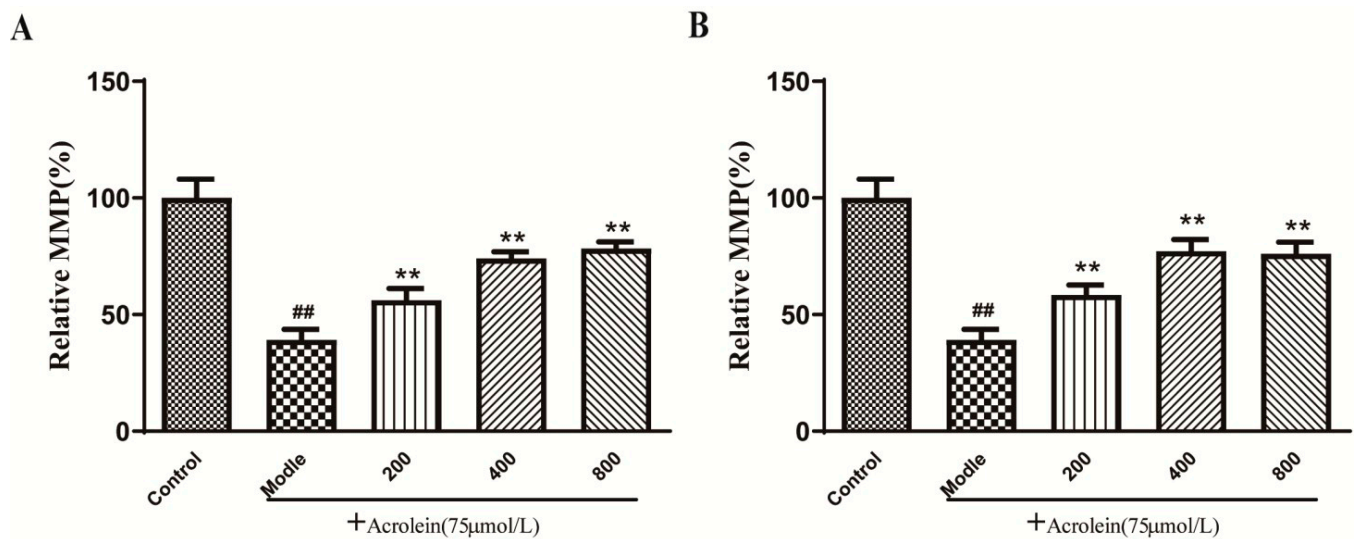
Figure S4. Protective effect of **COS-5** and **N-5** against acrolein-induced ARPE-19 mitochondrial dysfunction. The cells were pre-treated with 200, 400, 800 µM **COS-5** (A) or **N-5** (B) for 48 h and then treated with 75 µM acrolein for additional 24 h. The effects of **COS-5** or **N-5** on mitochondrial membrane potential were tested using the JC-1 method. Data are red/green (590/530 nm) fluorescence ratios. The data expressed as ratio relative to controls. Values are mean ± SD of three separate experiments. ${}^{\#\#}p$ <0.01 vs. control (no acrolein, no **COS-5** and **N-5**); *p <0.05, **p < 0.01 vs. acrolein.