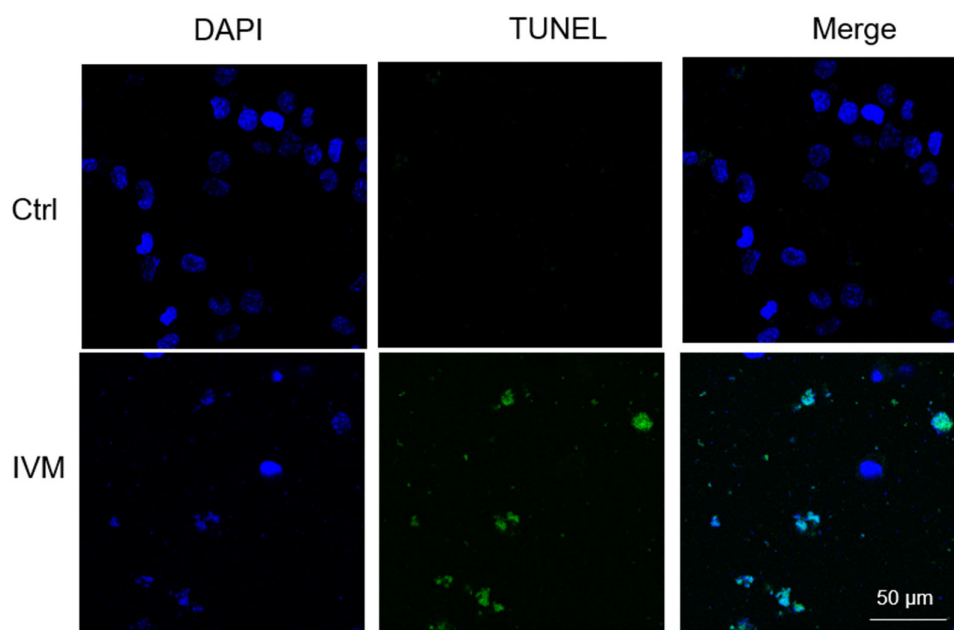
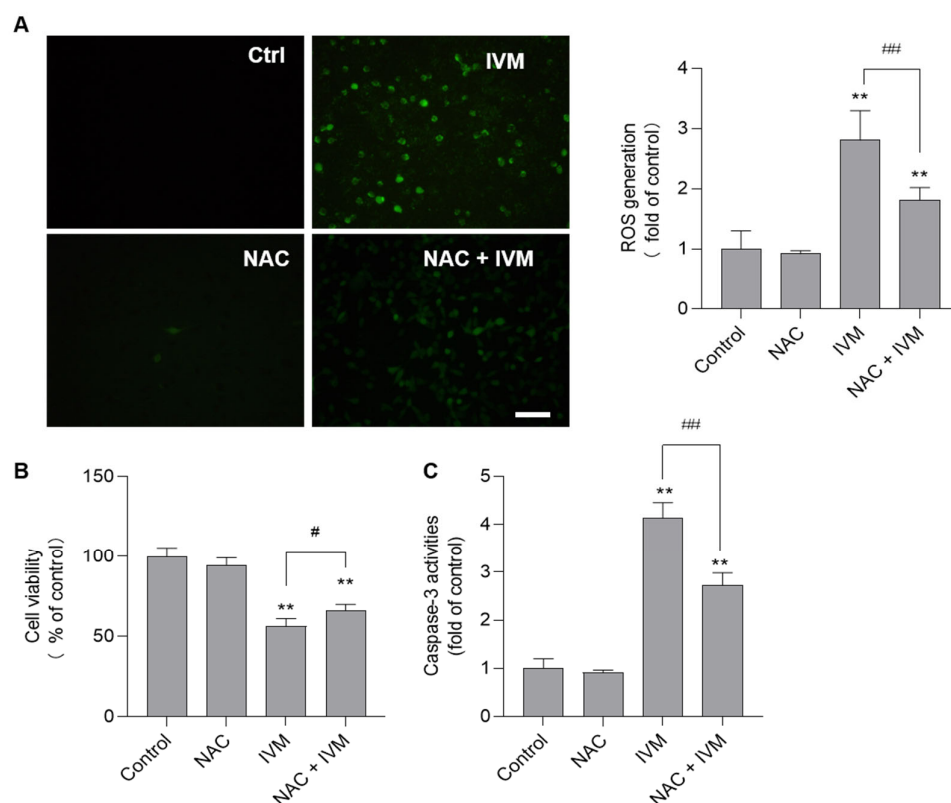


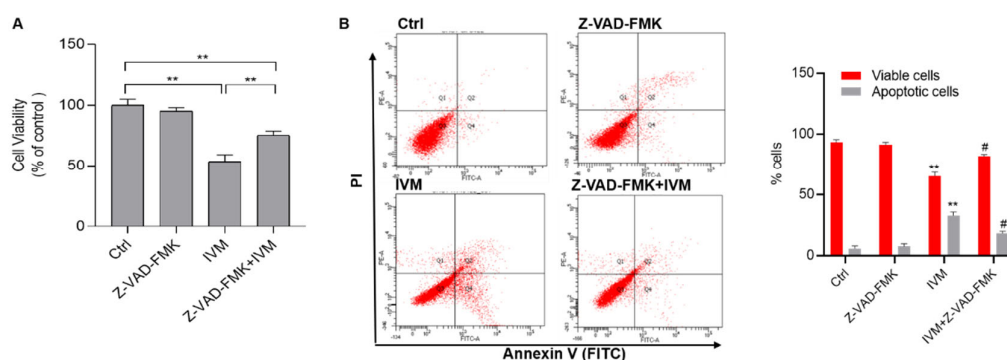
**Figure S1.** Changes of IVM treatment on the cell morphology. Cells were treated with IVM at the various doses of 0.625, 1.25, 2.5, 5, 7.5, 10, and 15  $\mu\text{M}$  for 24 h, respectively, the changes of cell morphology were observed. Bar=50  $\mu\text{m}$ .



**Figure S2.** Representative TUNEL-stained images. SH-SY5Y cells were treated with IVM at the dose of 10  $\mu\text{M}$  for 24 h, TUNEL staining were performed according to protocol provided by using a deoxynucleotidyl transferase-mediated dUTP nick-end labelling (TUNEL) kits (Vazyme Biotech Co., Ltd., Nanjing, China). Cell nuclei was labelled by 4'-6-diamidino-2-phenylindole (DAPI). Bar=50  $\mu\text{m}$ .



**Figure S3.** N-acetylcysteine supplementation improves IVM-induced cytotoxicity, ROS production and caspase activation in human SH-SY5Y cells. **A**, Cells were pre-treated with NAC at 10 mM, followed to treat with ivermectin (IVM) at 10  $\mu$ M for 24h, levels of intracellular ROS were stained the fluorescent probe 2,7-dichlorofluorescein diacetate (DCFH-DA), the representative images (on the left) were selected and quantitative analysis (on the right) was performed; Bar = 50  $\mu$ m. **B**, Cell viabilities were tested by using CCK-8 kit. **C**, The activities of caspase-3 were analysed by using commercial caspase-3 detection kit. The data shown represent the mean  $\pm$  SD (n=3); Bar=50  $\mu$ m. Compared to the control group, \*\* $P$  < 0.01; Compared to the IVM treatment, #  $P$  < 0.05 or ##  $P$  < 0.01.



**Figure S4.** Caspase pan-inhibitor Z-VAD-FMK improved IVM-induced cytotoxicity and apoptosis. Cells were pre-treated with Z-VAD-FMK at 10  $\mu$ M, followed to treat with ivermectin (IVM) at 10  $\mu$ M for 24 h, then, cell viabilities (**A**) and apoptosis (**B**) were analysed, respectively. Compared to the control group, \*\* $P$  < 0.01; Compared to the IVM alone treatment, #  $P$  < 0.05.