## Appendix 1 Methods—SOD and MDA

### *SOD activity assay*

(I) About 60 mg of brain tissue was taken from each mouse, washed with saline, absorbed the surface water, and weighed by an electronic balance to record the mass of each sample.
(II) Add 500 ml of sucrose buffer (0.25 mol/l sucrose, 10 mmol/l HEPES, 1 mmol/l EDTA, pH 7.4) to each sample, and homogenize well with a glass homogenizer.
(III) Centrifugation in ultracentrifuge (10000 × g, 15 min). Take the supernatant as Sample solution, then add reagents to the 96-well plate according to the instructions.

| Well contents | Sample | Blank 1 | Blank 2 | Blank 3 |
|---|---|---|---|---|
| Sample solution | 20 μL | - | 20 μL | - |
| ddH20 | - | 20 μL | - | 20 μL |
| WST working solution | 200 μL | 200 μL | 200 μL | 200 μL |
| Dilution buffer | - | - | 20 μL | 20 μL |
| Enzyme working solution | 20 μL | 20 μL | - | - |

Blank 1: Blank control without inhibitor; Blank 2: Sample blank control; Blank 3: Reagent blank control.

(IV) Set three replicate wells for each sample and take the value of blank 3 in *Table 1* to do X/Y smoothed line scatter plot to get the curve.
(V) Select several data points close to 50% inhibition, and then add the logarithmic trend line, pay attention to make R2 as close to 1 as possible.
(VI) After obtaining the logarithmic formula, take the value of y=50% to obtain x, which is the IC50 concentration.
(VII) According to the WST method, calculate the content of SOD in the sample.
(VIII) SOD concentration in the sample solution = 50 U/mL ÷ $IC_{50}$ concentration, the final SOD content in the sample = SOD concentration in the sample solution × amount of sample solution ÷ weight of sample before treatment

SOD, superoxide dismutase; HEPES, 4-(2-hydroxyethyl)-1-piperazineethanesulfonic acid; EDTA, ethylenediaminetetraacetic acid; $ddH_2O$, double-distilled water; WST, water-soluble tetrazolium; $IC_{50}$, half-maximal inhibitory concentration.

### *MDA level detection*

Brain tissue MDA levels were detected using the absorbance method.

(I) Take about 30 mg of paraneoplastic brain tissue from each mouse, add 500 μL of Antioxidant PBS solution and homogenize well on an ice bath.
(II) Transfer all the homogenized liquid to a new microtube and centrifuge at 10,000 ×g for 5 min at 4 ℃ in a high-speed centrifuge.
(III) Take 200 μL of supernatant into a new microtube.
(IV) Prepare MDA standard solution.
(V) Add 200 μL of Lysis Buffer to the prepared sample solution and the MDA standard solution, and mix thoroughly with a vortex shaker.
(VI) Allow to stand at room temperature for 5 min.
(VII) Add 300 μL of configured Working solution to each microtube and mix well with a vortex shaker.
(VIII) Heat in a thermostat at 100 ℃ for 15 min and cool in an ice bath for 5 min.


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(IX) Centrifuge at 10,000 ×g for 10 min and add 200 µL of supernatant to a clear 96-well plate.
(X) Determine the absorbance at 532 nm with an enzyme meter. The concentration of MDA in the sample was calculated from the standard curve of MDA.

MDA, malondialdehyde; PBS, phosphate-buffered saline.

**Table S1** Smith lung injury score

| Phenomenon | Damage range | Fraction |
|---|---|---|
| Pulmonary tissue edema | No damage | 0 |
| Alveolar and interstitial inflammation | Damage range <25% | 1 |
| Alveolar and interstitial hemorrhage | 25%≤ damage range <50% | 2 |
| After atelectasis and hyaline membrane formation | 50%≤ damage range <75% | 3 |
| | 75≤ damage range | 4 |

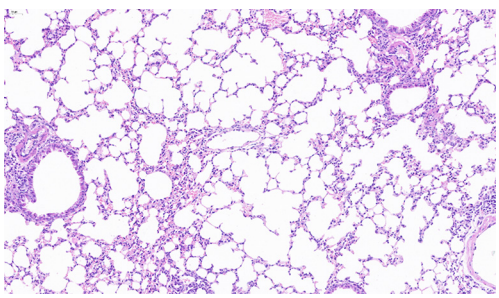

**Figure S1** Representative H&E images showing lung tissue injury at 3 days post-ICH (scale bar =50 µm). H&E, hematoxylin-eosin; ICH, intracerebral hemorrhage..


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