

**Figure S-1.** The result of TTC staining for all the experiment groups: A. for Sham group or the failure operation subjects in MCAO groups; B. for MCAO groups.

**Figure S-2.** Loadings plots for the corresponding scores plots shown in Figure 2. The plots were obtained using the total integral normalization respectively and two hundred and thirty-eight variables are shown with the starting  $\delta$  values of 0.04 ppm regions.

**Figure S-3.** Loadings plots for the corresponding scores plots shown in Figure 4. The plots were obtained using the total integral normalization respectively and two hundred and thirty-eight variables are shown with the starting  $\delta$  values of 0.04 ppm regions.

**Figure S-4.** PLS-DA scores plots derived from the 600MHZ  $^1\text{H}$  NMR spectra of CSF samples obtained from all the experiment groups. Sham group ( $\blacktriangle$ s), MCAO<sub>0</sub> ( $\blacktriangle$ 0), MCAO<sub>0.5</sub> ( $\blacktriangle$ 0.5), MCAO<sub>1</sub> ( $\blacktriangle$ 1), MCAO<sub>3</sub> ( $\blacktriangle$ 3), and MCAO<sub>6</sub> ( $\blacktriangle$ 6).