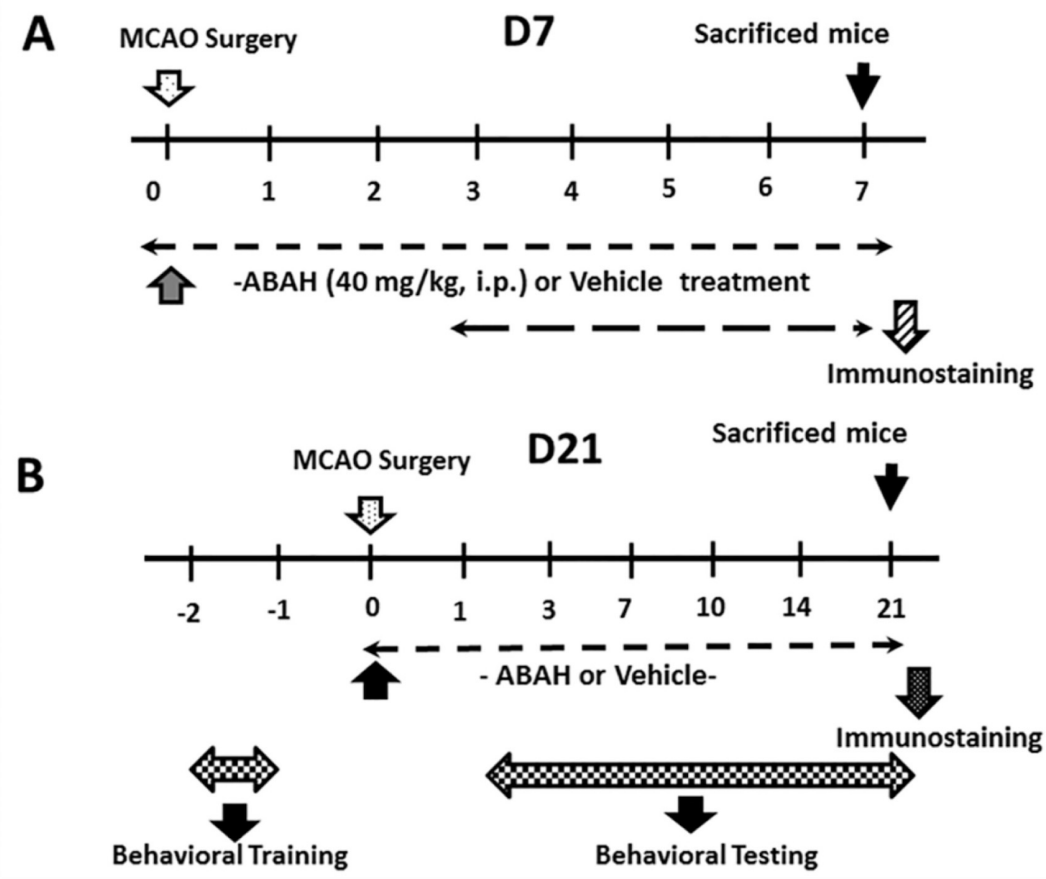
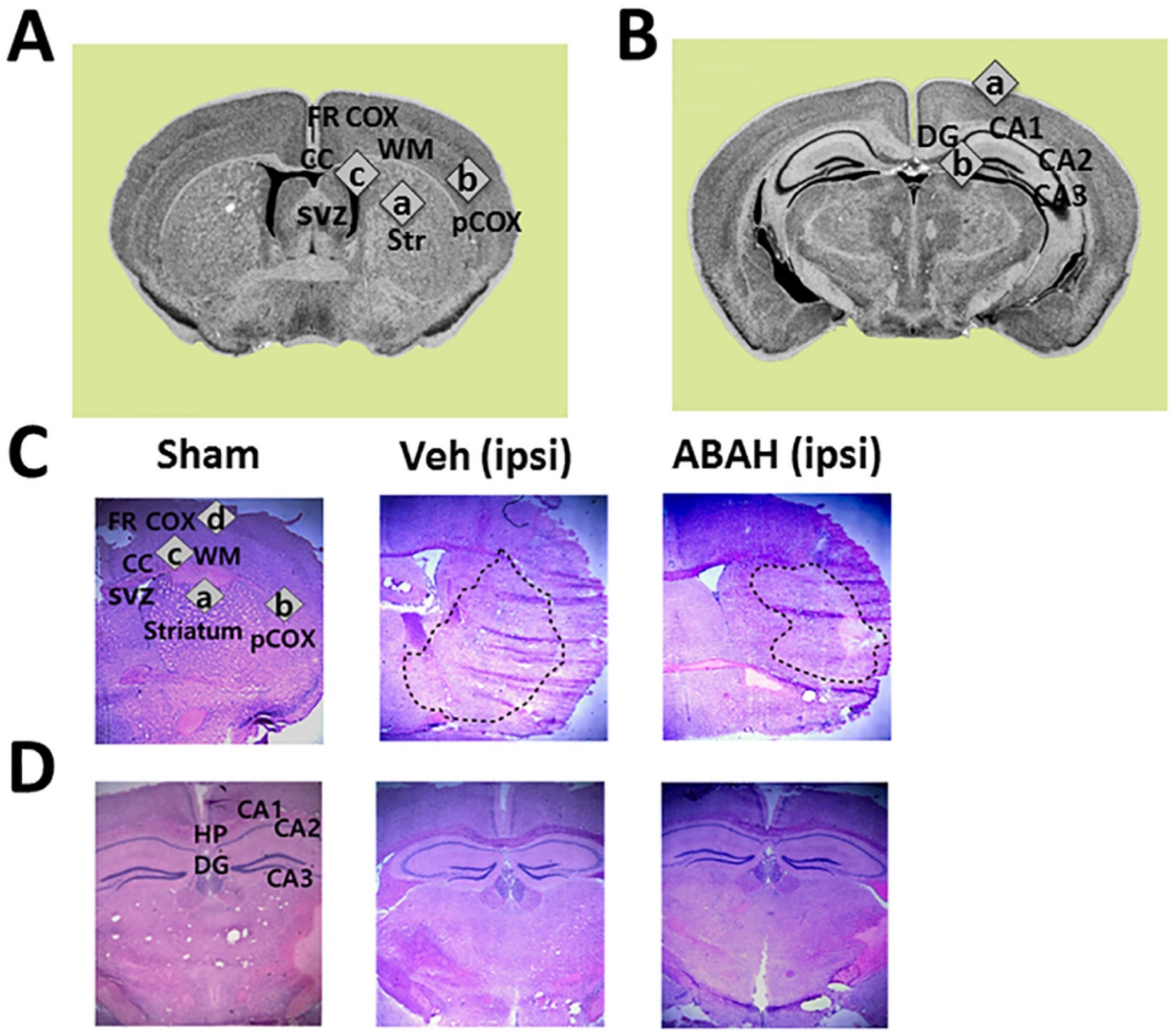
ONLINE SUPPLEMENT

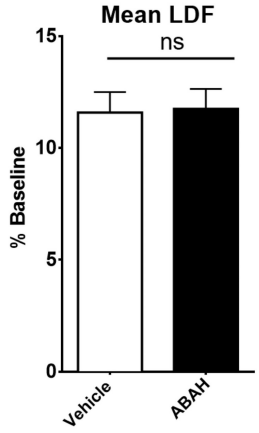


Supplementary Fig. 1. (A) Schematic diagram of experiment on day 7 after stroke: Mice were treated twice daily with intraperitoneal injections of either 4-aminobenzoic acid hydrazide (ABAH, 40 mg/kg body weight, i.p.) or vehicle, starting immediately after tMCAO and sacrificed on day 7 after stroke. Sample was collected on day 7 after stroke. **(B)** Experimental scheme for day 21 after stroke. Mice were treated with the same conditions in (A) with ABAH treatment administered to day 21 after stroke. Behavioral test was performed with pre-training and 8-point neurological test up to day 21 after stroke. Immunostaining sample was collected on day 21 after stroke.

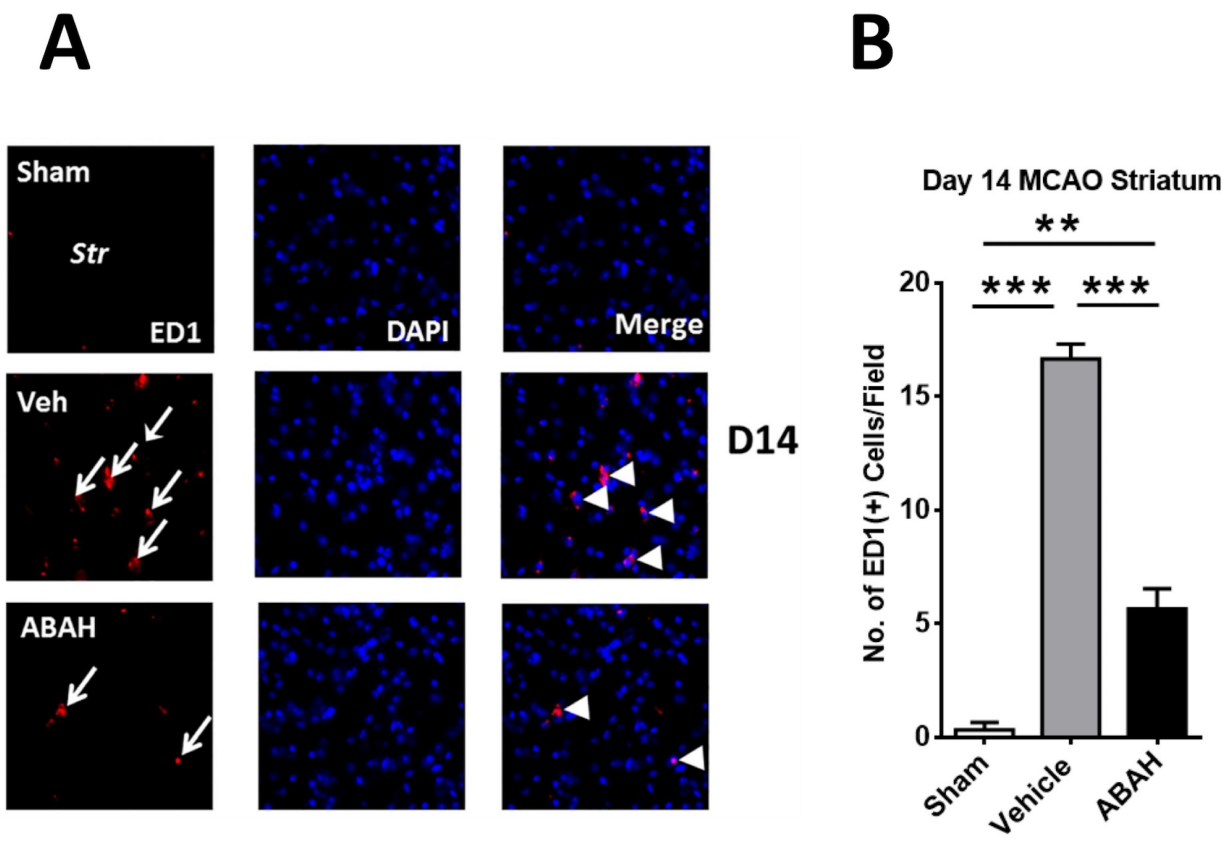


Supplementary Fig. 2. Schematic diagram of the anatomic locations utilized for immunohistochemistry after tMCAO. **(A)** shows the regions of the SVZ, striatum, white matter and parietal cortex used for immunohistochemistry (as shown in boxes, a-d) in a brain section after tMCAO. SVZ, subventricular zone; Str:striatum, WM:white matter, FR COX: frontal cortex, CC:corpus callosum, pCOX:parietal cortex. **(B)** shows the area in the hippocampal dentate gyrus used for immunohistochemistry (as shown in box, a & b). DG:dentate gyrus, CA1: hippocampal CA1. **(C)** H&E staining on day 7 after tMCAO. Sham, vehicle, and ABAH in ipsilateral (ipsi) SVZ region on day 7 after tMCAO. SVZ; subventricular zone (2x). Dotted lines

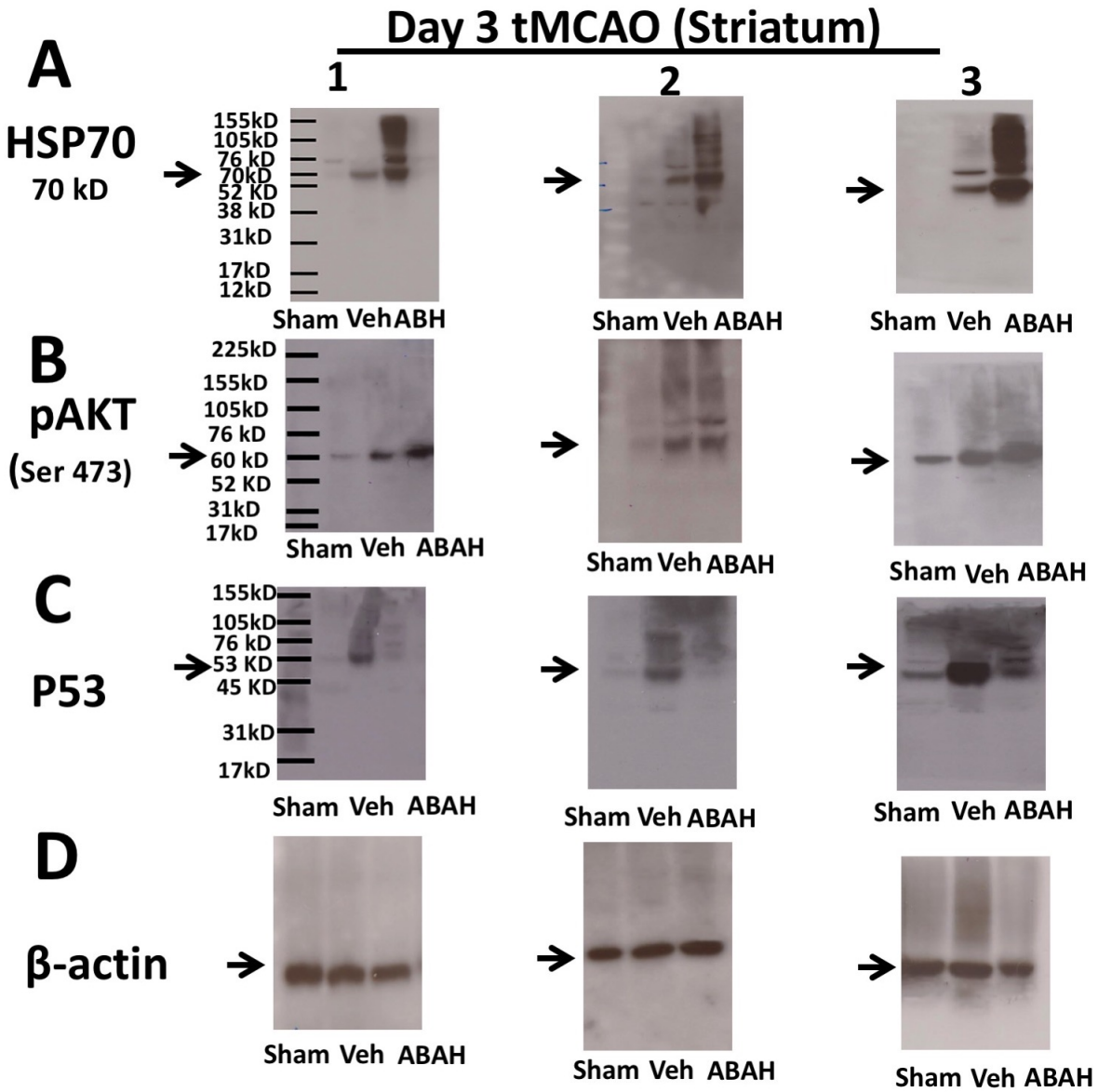
show the brain infarcted area. **(D)** Sham, vehicle and ABAH images in the hippocampal region (2x).



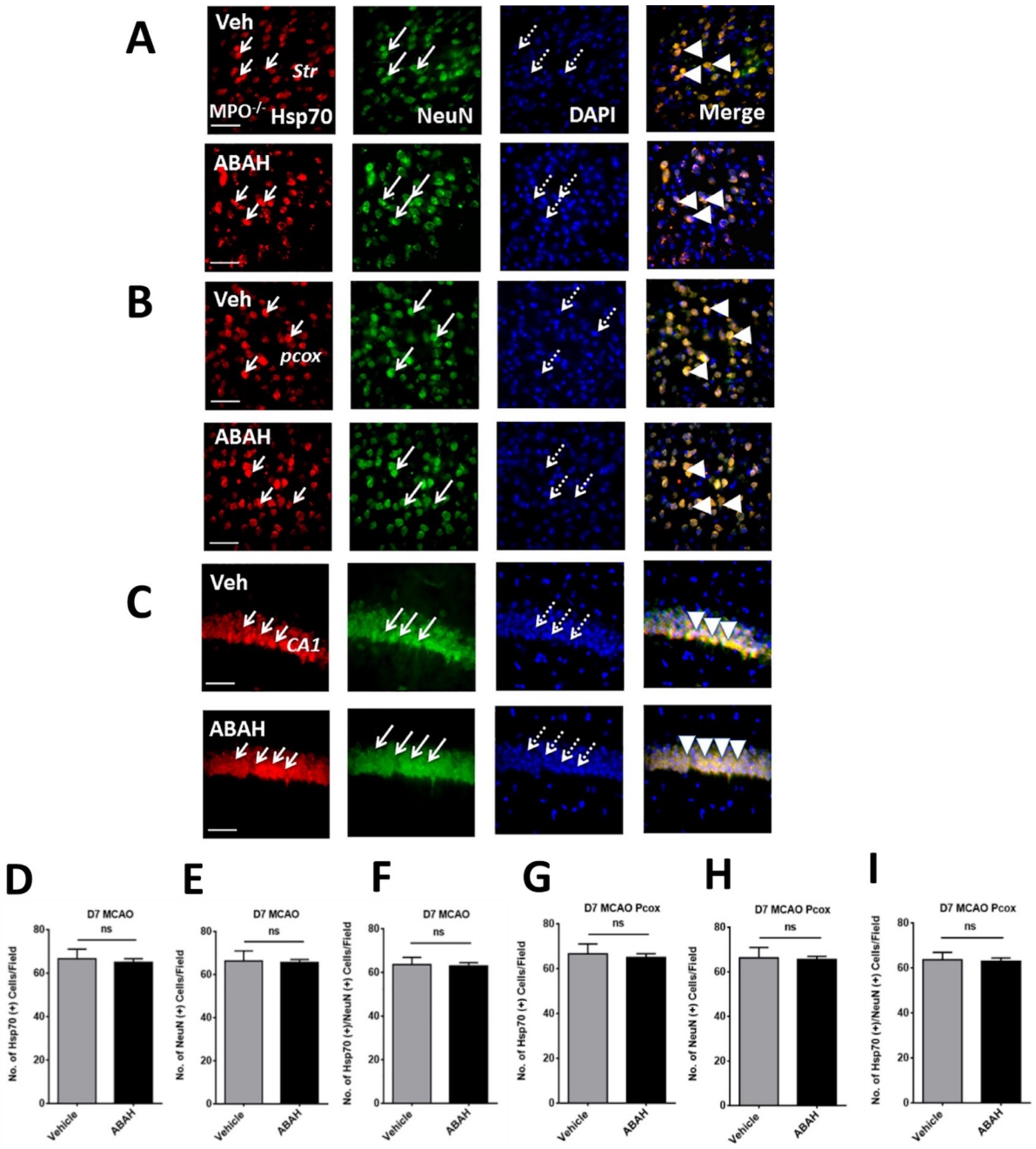
Supplementary Fig. 3. Laser Doppler Flowmetry (LDF) measurements following tMCAO. Vehicle (n=30) and ABAH (n=30). ns=not significant. Data are expressed as the mean ± SEM. Statistical analysis were performed by nonparametric Mann-Whitney test.



Supplementary Fig. 4. Immunostaining for ED1$^+$ (CD68) cells on day 14 after tMCAO. MPO inhibition by ABAH treatment decreased the number of ED1$^+$ cells compared to saline-treated control mice in the ipsilateral striatum. **(A)** Striatum: Sham, vehicle, and ABAH-treated mice. ED1$^+$ (red), DAPI (blue) and merge cells. Representative images were taken from 3-4 mice. Magnification, ×40. Scale bar, 50 μm. **(B)** Quantified result of ED1$^+$ cells on day 14 after tMCAO. Vehicle-treated mice significantly increased number of ED1$^+$ cells, but it was markedly reduced by MPO inhibition. Data are reported as the mean ± S.E.M. ANOVA followed by Bonferroni post hoc test: $^{**}P < 0.05$, $^{***}P < 0.001$. between indicated groups.

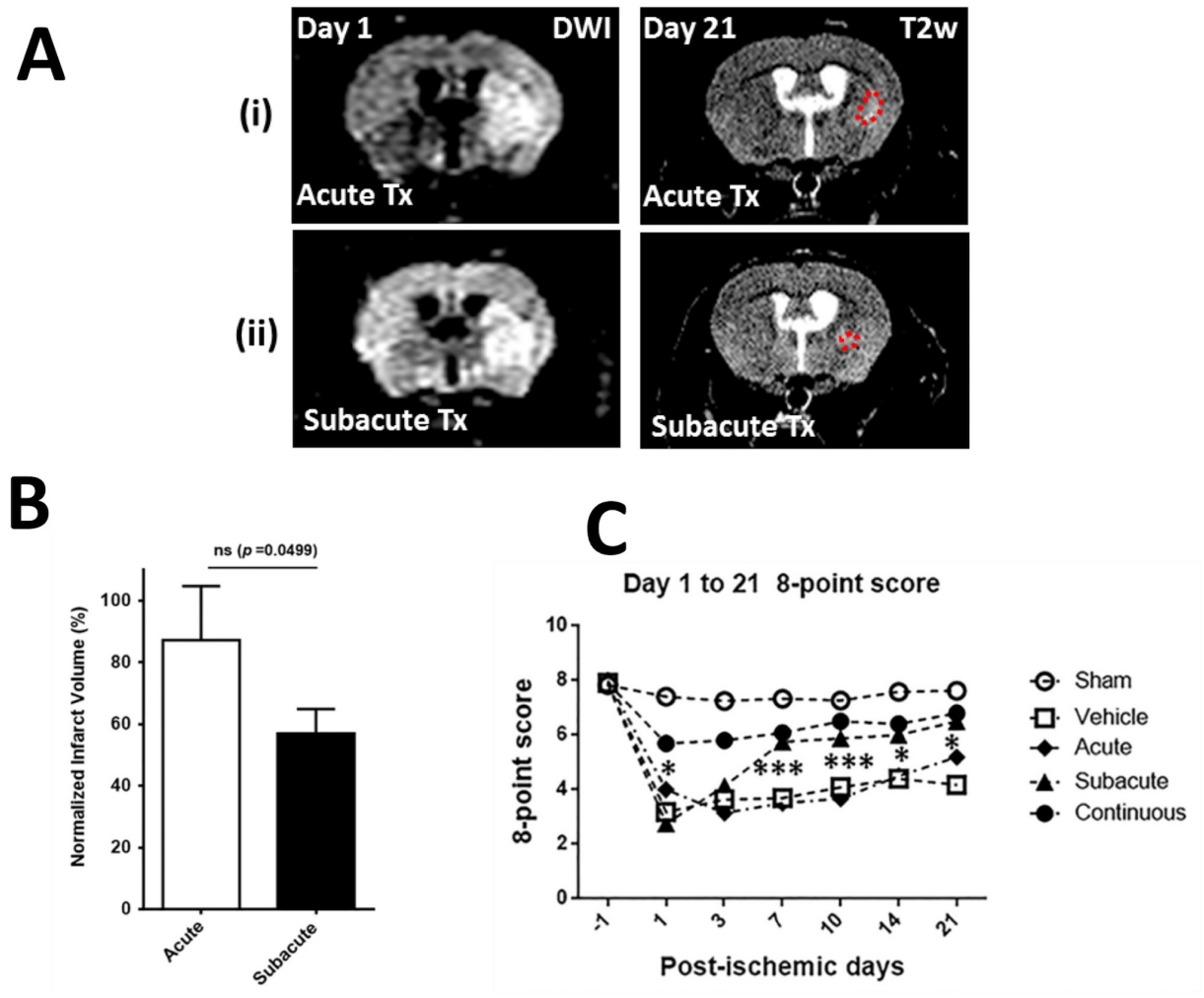


Supplementary Fig. 5. Source Western blot images for Fig. 5.



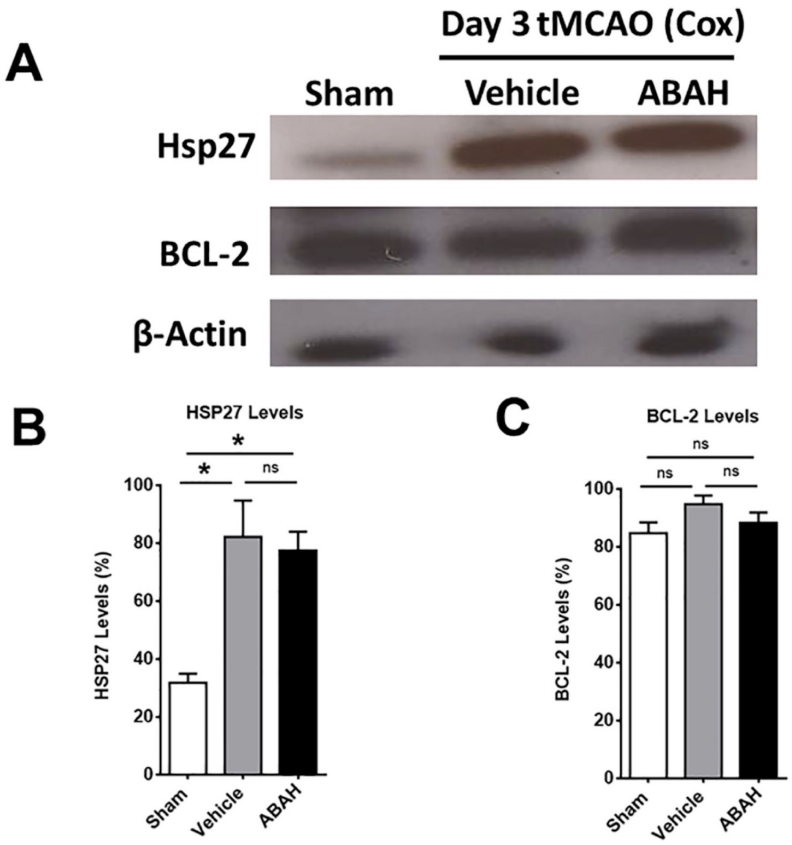
Supplementary Fig. 6. Double immunostaining of Hsp70^{+} and NeuN^{+} cells in the ipsilateral **(A)** striatum (str), **(B)** parietal cortex (pcox), and **(C)** CA1 of the hippocampus on day 7 after stroke. Note that vehicle-treated MPO$^{-/-}$ mice shows a similar effect for ABAH-treated MPO$^{-/-}$ mice. Short arrows show Hsp70^{+} cells and long arrows identify NeuN^{+} cells. Dotted arrows identify DAPI^{+} cells. Str: striatum, triangles show colocalized cells. Magnification, ×40. Scale bar, 50

μm. Representative images from 3 animals per group. Hsp70 (red), NeuN (green), and DAPI (blue). Quantification of $Hsp70^{+}$, $NeuN^{+}$, and $Hsp70^{+}/NeuN^{+}$ cells in sham, vehicle- and ABAH-treated ipsilateral striatim of tMCAO $MPO^{-/-}$ mice. **(D)** $Hsp70^{+}$ cells, **(E)** $NeuN^{+}$, **(F)** $Hsp70^{+}/NeuN^{+}$. Data are mean ± SEM and were analyzed from 3-4 animals in each group. NS: no significance between the indicated groups. Quantification of $Hsp70^{+}$, $NeuN^{+}$, and $Hsp70^{+}/NeuN^{+}$ cells in sham, vehicle- and ABAH-treated ipsilateral parietal cortex of tMCAO $MPO^{-/-}$ mice. **(G)** $Hsp70^{+}$ cells, **(H)** $NeuN^{+}$ and **(I)** $Hsp70^{+}/NeuN^{+}$. Data are mean ± SEM and were analyzed from 3-4 animals in each group. NS: no significance between the indicated groups.



Supplementary Fig. 7. Acute vs. subacute MPO inhibition. **(A)** Representative DWI images on day 1 shows comparable acute injuries in acute and subacute treated mice. Subacute treatment of MPO inhibition significantly reduced day 21 T2 lesion volume in MR images and improved 8-point neurological outcome compared with acute treatment following tMCAO. Mice were treated one day only with ABAH or daily but starting on day 2 (subacute group) after tMCAO for 30 min. Comparison of both acute and subacute treated brain MR images on days 1 and 21 after tMCAO. DWI: diffusion-weighted images, T2W: T2-Weighted images. Dotted lines outline the residual infarct on day 21. **(B)** Quantified data of brain infarction on day 21 after stroke. Acute-treated animals (n=5), Subacute–treated animals (n=8). (C) Inhibition of MPO activity by

subacute (delayed) or continuous ABAH treatment significantly improved 8-point neurological deficits compared with vehicle-treated or acute ABAH-treated animals up to on day 21 after stroke. Note that for the continuous treatment group, by day 1 they have received 4 doses compared to the acute group that only received 2 doses on day 0. Sham: n=8, vehicle: n=11-14, acute ABAH: n=5-8, subacute ABAH: n=8, and continuous ABAH: n=10-11. Data are Mean ± SEM. ANOVA followed by Bonferroni's *post-hoc* test. * $p < 0.05$, *** $p < 0.001$ between indicated groups.



Supplementary Fig. 8. (A) Western blots for Hsp27 and BCL-2 levels in the ipsilateral cortex on day 3 after tMCAO in mice. β-actin was used for loading controls. Data shown are representative from each group. **(B & C)**. Quantified result of Hsp27 and BCL-2 levels. Data are mean ± SEM of percentage of protein levels with 3 animals in each group. ANOVA followed by Bonferroni's *post-hoc* test. ns; not significant. * $p < 0.05$, between indicated groups.