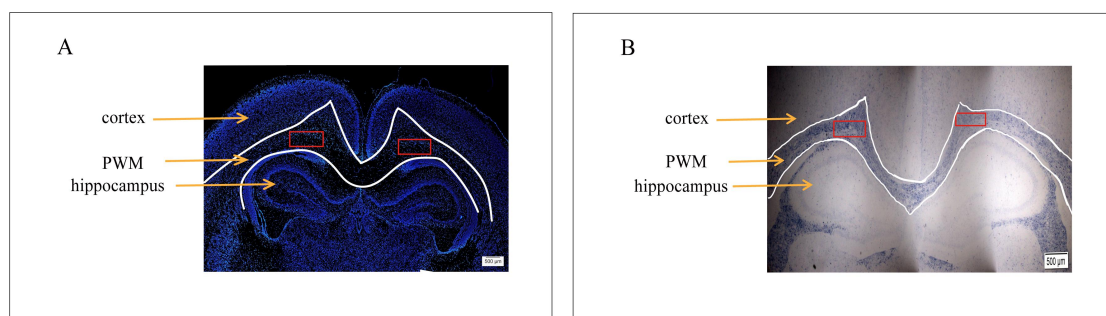
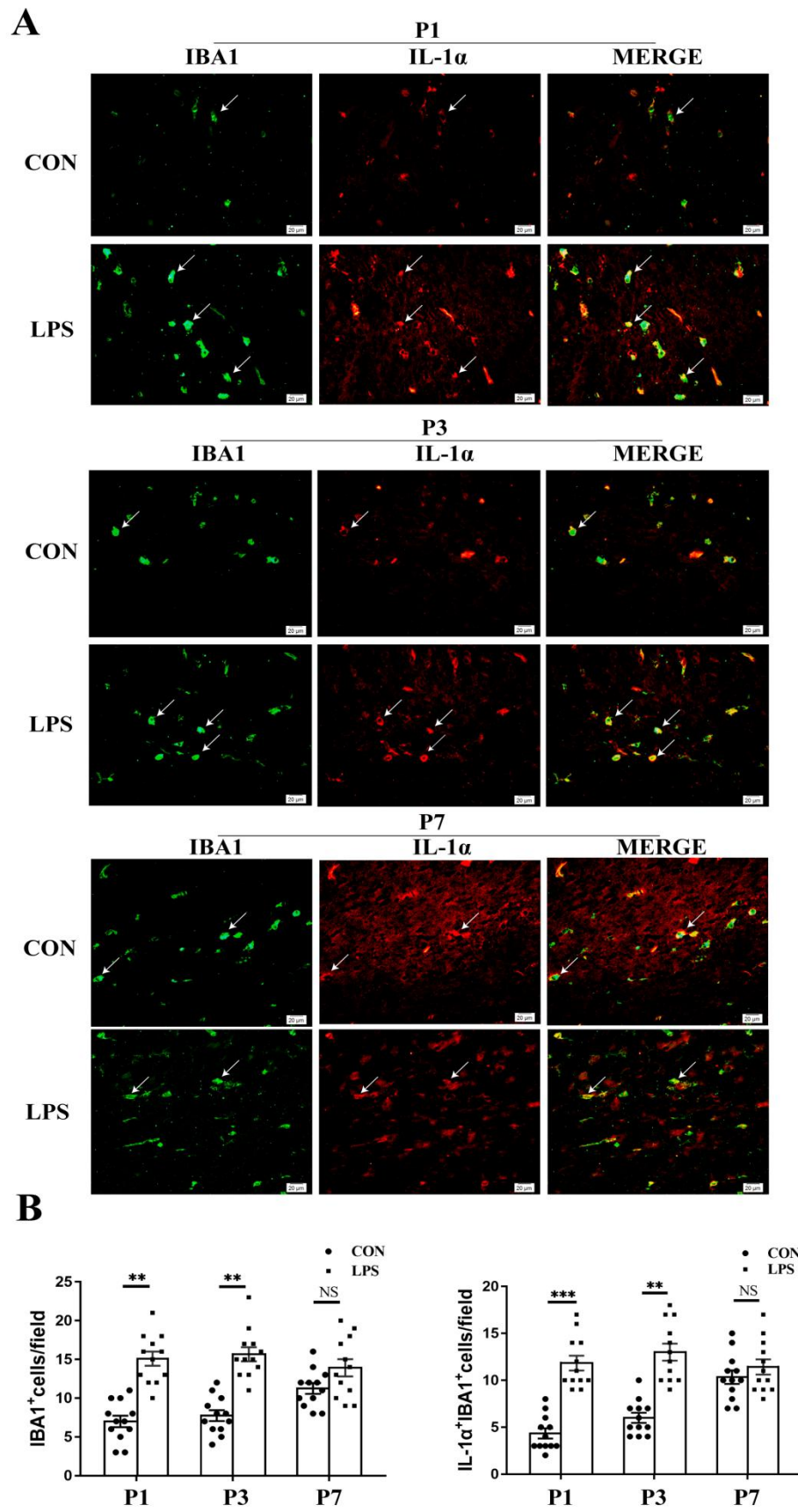


**Supporting Fig. 1**

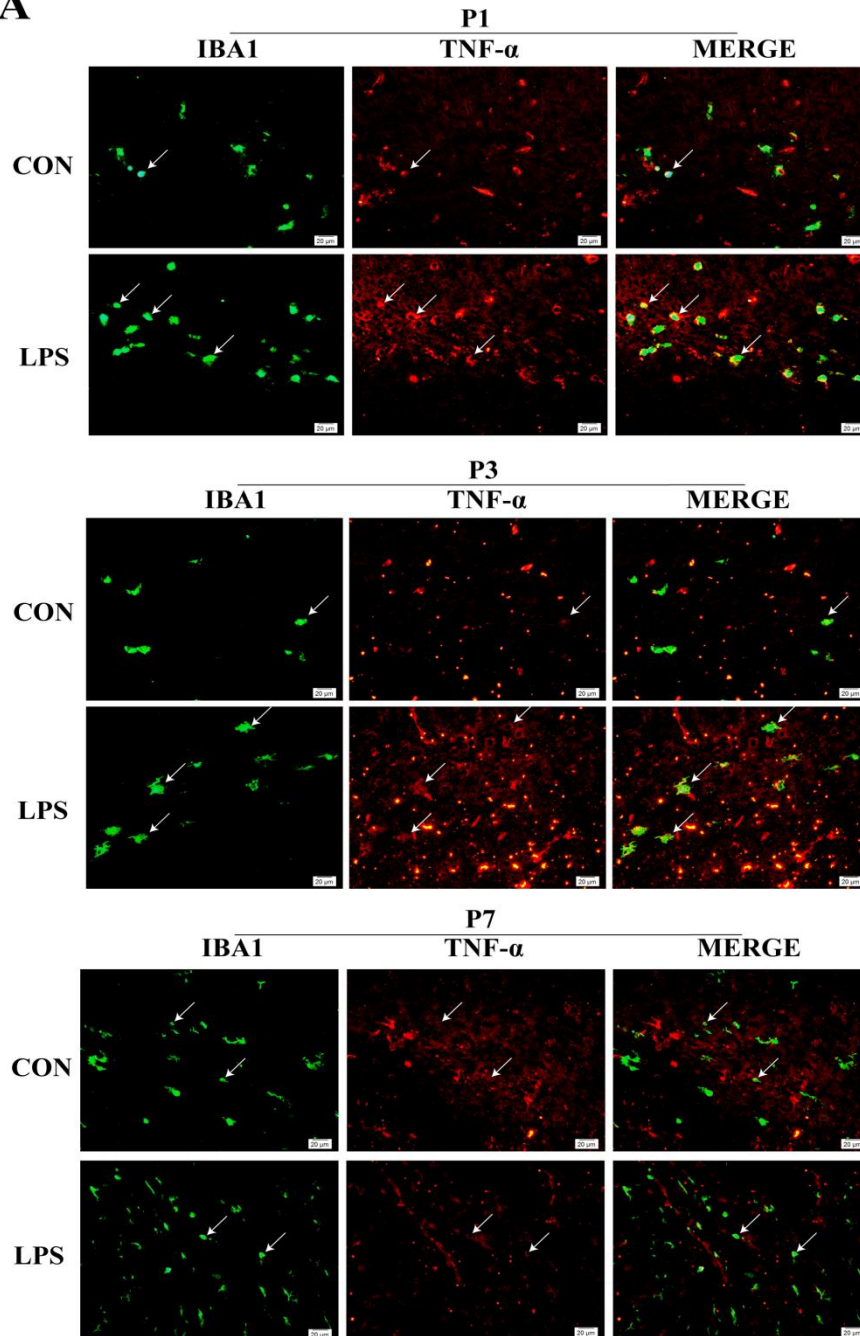


**Supporting Fig. 2**

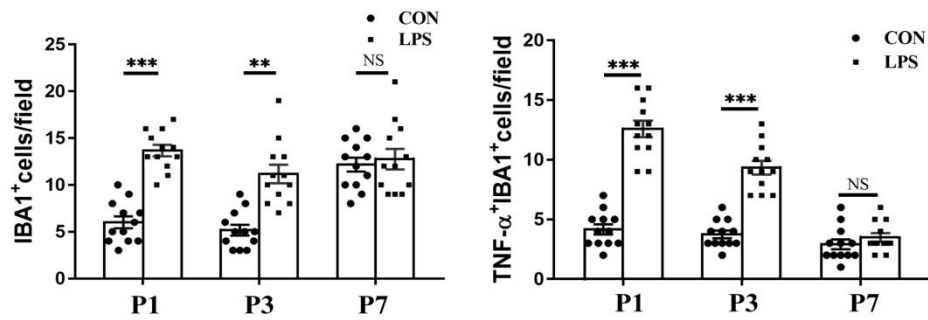


Supporting Fig. 3

**A**



**B**



Supporting Fig.4

**Supporting Fig. 1** The rats at postnatal day 1 (P1) were intraperitoneally injected with LPS (1 mg/kg) and served as the LPS group. The rats in the LPS + MEL group were injected intraperitoneally with melatonin (10 mg/kg) at 7 days after LPS injection (1 mg/kg) and then injected once daily until postnatal day 28. The rats in each group were sacrificed at different time points at 7, 14, and 28d. Behavior tests were carried out to assess the long-term neurological dysfunction of rats.

**Supporting Fig. 2** The overall status image of the PWM. A (immunofluorescence) (DAPI blue) and B (in situ hybridization) showed the area of the corpus callosum analyzed in this study. The white box shows the PWM in brain. The red box shows the lesion area of the PWM as analyzed in this study.

**Supporting Fig. 3** IL-1 $\alpha$  protein expression in the microglia of postnatal rats at 1d, 3d and 7d after LPS injection and their matching controls. Double immunofluorescence staining showed the distribution of IBA1 labeled (A green), and IL-1 $\alpha$  (A red) immunoreactive microglial cells in the PWM at 1d, 3d and 7d after the LPS injection and their matching controls. The co-localized expression of IBA1 and IL-1 $\alpha$  in microglia showed the number of IL-1 $\alpha$ <sup>+</sup> IBA1<sup>+</sup> cells was increased at 1d and 3d after LPS injection when compared with control. However, the difference was not significant at 7d after LPS treatment in comparison with control (B). Scale bars: 20 $\mu$ m. \*\* $P$ <0.01, \*\*\* $P$ <0.001.

**Supporting Fig. 4** TNF- $\alpha$  protein expression in the microglia of postnatal rats at 1d, 3d and 7d after LPS injection and their matching controls. Double immunofluorescence staining showed the distribution of IBA1 labeled (A green), and

TNF- $\alpha$  (A red) immunoreactive microglial cells in the PWM at 1d, 3d and 7d after the LPS injection and their matching controls. The co-localized expression of IBA1 and TNF- $\alpha$  in microglia showed the number of TNF- $\alpha^+$  IBA1 $^+$  cells was increased at 1d and 3d after LPS injection when compared with control. However, the difference was not significant at 7 d after LPS treatment in comparison with control (B). Scale bars: 20 $\mu$ m. \*\* $P$ <0.01, \*\*\* $P$ <0.001.