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C... I/RI... SONL... K-ATP

Materials and Methods


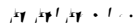
Animals and ethics

S... 250... 300... U... I... A... C... 24... 55%... 12... A... U... A... E... C

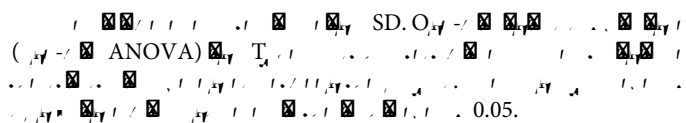






































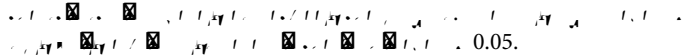
Modeling of cerebral ischemia/reperfusion injury and animal grouping

(MCAO) I/RI... 15]. A... (400... 0.234... 18-20... 2... 37-37.5 C... 24... S... R...

R... (n=6): 1) S... ; 2) I/R; 3) I/R + SONL10; 4) I/R + SONL50; 5) I/R + 5HD; 6) I/R + 5HD + SONL50. I... SOLN-

• -. 

Statistical analysis

 SD. O₂                    ANOVA)  T₂                    0.05.

Result

The neuroprotective action of SONL

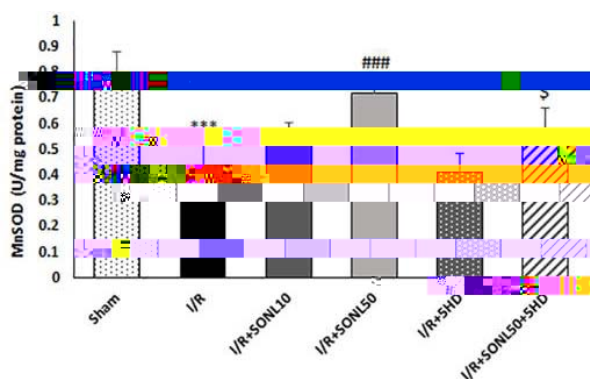
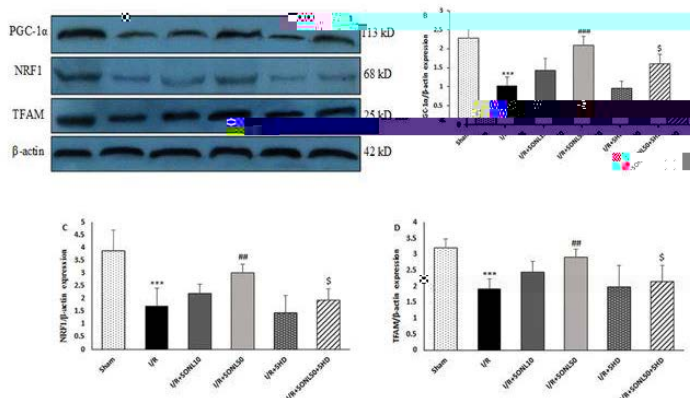


Figure 3: The actions of SONL on mitochondrial MnSOD level following cerebral I/R injury in each group (n=6).

Figure 3 shows the actions of SONL on mitochondrial MnSOD level following cerebral I/R injury in each group (n=6). The bar chart displays MnSOD levels (U/mg protein) for Sham, I/R, I/R+SONL10, I/R+SONL50, I/R+5HD, and I/R+SONL50+5HD groups. The Sham group shows the highest MnSOD level (~0.8), while the I/R group shows a significant decrease (~0.3). Treatment with SONL (10, 50, and 50+5HD) significantly increases MnSOD levels compared to the I/R group, with the 50+5HD group showing the most pronounced effect (~0.7).



MnSOD levels were significantly lower in the I/R group compared to the Sham group ($P < 0.001$). Treatment with SONL (10, 50, and 50+5HD) significantly increased MnSOD levels compared to the I/R group ($P < 0.05$).

Effect of SONL on the mitochondrial biogenesis proteins

Western blot analysis showed that the expression levels of PGC-1 α , NRF1, and TFAM were significantly lower in the I/R group compared to the Sham group ($P < 0.001$). Treatment with SONL (10, 50, and 50+5HD) significantly increased the expression levels of PGC-1 α , NRF1, and TFAM compared to the I/R group ($P < 0.01$).

Effect of SONL on the proinflammatory cytokines

Western blot analysis showed that the expression levels of TNF- α , IL-6, and IL-1 β were significantly higher in the I/R group compared to the Sham group ($P < 0.001$). Treatment with SONL (10, 50, and 50+5HD) significantly decreased the expression levels of TNF- α , IL-6, and IL-1 β compared to the I/R group ($P < 0.05$).

Western blot analysis showed that the expression levels of K-ATP were significantly lower in the I/R group compared to the Sham group ($P < 0.01$). Treatment with SONL (10, 50, and 50+5HD) significantly increased the expression levels of K-ATP compared to the I/R group ($P < 0.05$).

Discussion

The present study investigated the neuroprotective and anti-inflammatory effects of SONL on cerebral I/R injury. The results showed that SONL (10, 50, and 50+5HD) significantly increased MnSOD levels and mitochondrial biogenesis proteins (PGC-1 α , NRF1, TFAM) while decreasing proinflammatory cytokines (TNF- α , IL-6, IL-1 β) and K-ATP levels.

Our findings suggest that SONL may exert its neuroprotective and anti-inflammatory effects through the regulation of mitochondrial biogenesis and the inhibition of the inflammatory response. The treatment with SONL (10, 50, and 50+5HD) significantly increased MnSOD levels and mitochondrial biogenesis proteins (PGC-1 α , NRF1, TFAM) while decreasing proinflammatory cytokines (TNF- α , IL-6, IL-1 β) and K-ATP levels.

