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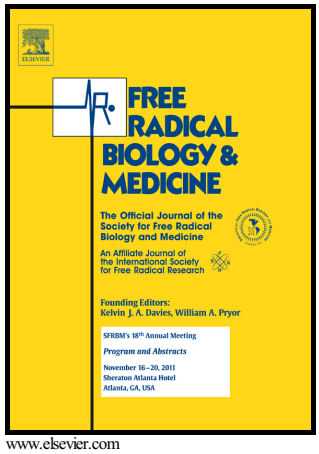

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Ischemic brain injury: new insights on the protective role of melatonin

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Abstract

Stroke represents one of the most common causes of brain's vulnerability for many millions of people worldwide. The plethora of physiopathological events associated with brain ischemia are regulate through multiple signaling pathways leading to the activation of oxidative stress process, Ca^{2+} dyshomeostasis, mitochondrial dysfunction, proinflammatory mediators, excitotoxicity and/or programmed neuronal cell death. Understanding this cascade of molecular events is mandatory in order to develop new therapeutic strategies for stroke. In this review article, we have highlighted the pleiotropic effects of melatonin to counteract the multiple processes of the ischemic cascade. Additionally, experimental evidence supports its actions to ameliorate ischemic long-term behavioural and neuronal deficits, preserving the functional integrity of the blood-brain