Propofol is an agonist at GABA-A receptors and antagonist at voltage-gated Na+ channels and NMDA receptors; it also modulates Ca2+ signaling. Propofol displays anesthetic, sedative/hypnotic, neuroprotective, and nephroprotective activities. Propofol is a short-acting intravenous anesthetic that depresses the central nervous system, decreases cerebral blood flow, and decreases intracranial pressure. In a middle cerebral artery occlusion (MCAO) model of cerebral ischemia/reperfusion, propofol decreases expression of aquaporins 1 and 4 (AQ-1 and AQ-4), matrix metalloproteinases 2 and 9 (MMP2/9), and HIF-1α, decreasing edema and disruption of the blood-brain barrier. Propofol also increases expression of µ-opioid receptors in neuroblastoma cells. Additionally, this compound normalizes osmolality, serum creatine, and levels of AQP-2, ICAM-1, TNF-α, Bcl-2, and Bax in kidneys, improving renal function in animal models of endotoxemia-induced kidney injury.

References


