



Review

Pharmacology of dimethyl sulfoxide in cardiac and CNS damage

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Abstract:

The pharmacological effects of dimethyl sulfoxide (DMSO) administration include some desirable properties that may be useful in the treatment of medical disorders resulting in tissue injury and compromised organ systems. These properties include the reported effects of DMSO on impaired blood flow, suppression of cytotoxicity from excess glutamate release that may result in lethal NMDA-AMPA activation, restriction of cytotoxic Na^+ and Ca^{2+} entry into damaged cells, blocking tissue factor (TF) from contributing to thrombosis, reduction of intracranial pressure, tissue edema, and inflammatory reactions, and inhibition of vascular smooth muscle cell migration and proliferation that can lead to atherosclerosis of the coronary, peripheral, and cerebral circulation. A review of the basic and clinical literature on the biological actions of DMSO in cardiac and central nervous system (CNS) damage or dysfunction indicates that this agent, alone or in combination with other synergistic molecules, has been reported to neutralize or attenuate pathological complications that harmed or can further harm these two organ systems. The effects of DMSO make it potentially useful in the treatment of medical disorders involving head and spinal cord injury, stroke, memory dysfunction, and ischemic heart disease.

Key words:

dimethyl sulfoxide, DMSO, heart disease, stents, stroke, traumatic brain injury, spinal cord trauma
