



A Brief Review of Safflower Injection in the Treatment of Cerebral Infarction



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Submission: May 01, 2018; Published: May 08, 2018

Introduction

Cerebral infarction (cerebral infarction), also known as acute ischemic stroke (acute cerebral ischemic stroke), refers to the necrosis of the localized brain tissue caused by cerebral blood circulation disorder, ischemia and hypoxia. Cerebral infarction is the most common type of stroke, accounting for 60%-80% of all strokes. In China, stroke has become the first cause of death in the country. According to the study, the number of people who died of cerebral infarction was as high as one million and five hundred thousand people, the annual growth rate were 8.7%, and the economic burden and social burden caused by stroke were very heavy. All of these highlight the urgency and importance of stroke prevention and treatment. Therefore, it is imperative to prevent and treat cerebral infarction.

Ischemia reperfusion injury is one of the important injury factors in the process of cerebral infarction, and its pathological process is very complicated. In the treatment of acute cerebral infarction, it is possible to remove the arterial thrombosis as early as possible, make the occlusion of the cerebral artery repasses, restore or improve the blood supply of the infarct area, prevent the ischemia reperfusion injury, save the ischemic penumbra, prevent the irreversible injury of ischemic brain tissue, and reduce the mortality and the rate of disability. At present, western medicine treatment mainly includes thrombolysis, anticoagulation, defibrination and so on.

Safflower is a commonly used medicine for activating blood circulation and removing blood stasis, and it is known as "the king of activating blood". Safflower injection is made from safflower, treated by boiling and alcohol precipitation, and the effect of activating blood circulation to dissipate blood stasis is more obvious. Therefore, safflower injection has an important therapeutic effect on cerebral infarction.

Alleviating cerebral ischemia and reperfusion injury

Safflower injection can correct the imbalance of thromboxane (TXA₂) HJNKM / prostacyclin (PGI₂) and abnormal changes of the ultrastructure of brain tissue in circulating blood after cerebral

ischemia-reperfusion, and reduce the injury of cerebral ischemia reperfusion.

Promote nerve function injury

When cerebral infarction occurs, it can cause severe neurological impairment. It has been proved that safflower injection can obviously inhibit platelet aggregation, reduce blood viscosity, dilate small arteries, improve microcirculation, and have obvious anti free radical damage effect. Therefore, it can effectively inhibit the formation and development of thrombus, promote the establishment of the collateral circulation of the brain, improve the circulation of the blood in the cerebral ischemia area and promote the recovery of the nerve function of the ischemic area.

Anti apoptotic effect

Apoptosis is an important way of neuronal death after cerebral ischemia-reperfusion injury. According to the data, safflower injection has an obvious anti apoptotic effect on hippocampus in rats with cerebral infarction. The occurrence of cerebral infarction can cause a large number of apoptosis. As time goes on, the number of apoptotic cells increases and the number of apoptotic cells increases. Safflower injection can maintain the anti apoptosis effect in 24h.

Up regulation of GRP78, down regulation of CHOP

GRP78 and CHOP are two typical markers of endoplasmic reticulum stress. When cerebral infarction occurs, endoplasmic reticulum stress is activated. GRP78 can be upregulated as a sensitive marker to help unfold the folded protein properly. In the later period, the dysfunction and damage of endoplasmic reticulum increased with the increase of GRP78 protein expression with the prolongation of stress time, and then initiated the apoptosis pathway mediated by endoplasmic reticulum stress, including the CHOP dependent pathway. Up regulation of CHOP expression can inhibit Bcl-2, consume glutathione, promote the production of oxygen free radicals (Caspase-3), and play an important role in apoptosis. According to the data, safflower injection can indirectly control the expression of Bcl-2 and Caspase-3, which are directly

related to apoptosis by influencing the expression of GRP78 and CHOP, thus causing ERS to decrease the apoptosis and then to control the process of apoptosis.

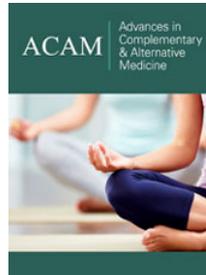
It can be seen that safflower injection has important practical significance for cerebral infarction. It can reduce the symptoms of cerebral infarction, slow down the progress of cerebral infarction and play the role of protecting and repairing the brain.



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