

Chrysophanol Ameliorate Cerebral Ischemic Injury in Rats by Reducing Inflammatory Response and Oxidative Stress and Improving Energy Metabolism

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SUMMARY. We investigated the effects of chrysophanol on cerebral ischemic injury in rats and the underlying action mechanism. Fifty-four rats were randomly divided into sham-operated group, model, and treatment groups. The treatment group was administered with 5 mg/kg chrysophanol by gavage for 14 days. The cerebral ischemic injury model was prepared by ligation of bilateral common carotid arteries. After 3 h from modeling, compared with model group, in chrysophanol treatment group the brain index, water content and cerebral infarction percentage were significantly decreased, the brain tissue tumor necrosis factor α , interleukin 1β and malondialdehyde levels were significantly decreased, the brain tissue superoxide dismutase and glutathione peroxidase levels were significantly increased, the brain tissue lactic acid level was significantly decreased, and the brain tissue $\text{Na}^+\text{-K}^+\text{-ATPase}$ and $\text{Ca}^{2+}\text{-ATPase}$ activities were significantly increased. The chrysophanol pre-treatment may ameliorate the cerebral ischemic injury in rats by reducing the inflammatory response and oxidative stress and improving the energy metabolism in brain tissue.

RESUMEN. Investigamos los efectos del crisofanol sobre la lesión isquémica cerebral en ratas y el mecanismo de acción subyacente. Cincuenta y cuatro ratas se dividieron aleatoriamente en grupo de operación simulado, grupo modelo y grupo de tratamiento. Al grupo de tratamiento se le administraron 5 mg/kg de crisofanol por sonda durante 14 días. El modelo de lesión isquémica cerebral se preparó mediante ligadura de arterias carótidas comunes bilaterales. Después de 3 h de modelado, en comparación con el grupo modelo, en el grupo de tratamiento con crisofanol el índice cerebral, el contenido de agua y el porcentaje de infarto cerebral disminuyeron significativamente, el factor de necrosis tumoral del tejido cerebral α , los niveles de interleucina 1β y malondialdehído disminuyeron significativamente, el superóxido del tejido cerebral, los niveles de dismutasa y glutatión peroxidasa aumentaron significativamente, el nivel de ácido láctico del tejido cerebral disminuyó significativamente y las actividades de $\text{Na}^+\text{-K}^+\text{-ATPasa}$ y $\text{Ca}^{2+}\text{-ATPasa}$ del tejido cerebral aumentaron significativamente. El pretratamiento con crisofanol puede mejorar la lesión isquémica cerebral en ratas al reducir la respuesta inflamatoria y el estrés oxidativo y mejorar el metabolismo energético en el tejido cerebral.

KEY WORDS: cerebral, chrysophanol, energy metabolism, ischemic injury, rats.

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