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# Ginsenoside Rg1 Protects Rats from Spinal Cord Ischemia-Reperfusion Injury by Resisting Oxidative Stress and Inflammatory Response

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***SUMMARY*. Our work aimed to investigate the protective effect of ginsenoside Rg1 (GRg1) on spinal cord ischemia-reperfusion injury (SCIRI) in rats and the mechanism. Forty-five rats were randomly divided into sham-operated, SCIRI group and SCIRI+GRg1 groups. In latter two groups the SCIRI model was made by clamping abdominal aorta followed by blood supply restoring. Before modeling, the SCIRI+GRg1 group was treated with 10 mg/kg GRg1 for seven days. After 6, 12, and 24 h of reperfusion, the motor function of hind limbs was assessed, and the oxidative stress and inflammatory response indexes in spinal cord tissues were determined. Results showed that at each time point after reperfusion, compared with SCIRI group, in SCIRI+GRg1 group the BBB, Basso, Beattie, and Bresnahan score was significantly increased ($P < 0.05$), the spinal cord tissue superoxide dismutase activity was significantly increased ($P < 0.05$), and the spinal cord tissue malondialdehyde, tumor necrosis factor α, interleukin 1β, and nuclear factor kappa-B levels were significantly decreased ($P < 0.05$). In conclusion, the pre-treatment with GRg1 exerts the neuroprotective effect in rats with SCIRI. The protective effects may be mediated by its resisting the oxidative stress and inflammatory response.**

*RESUMEN*. Nuestro trabajo tuvo como objetivo investigar el efecto protector del ginsenósido Rg1 (GRg1) en la lesión de isquemia-reperfusión de la médula espinal (SCIRI) en ratas y el mecanismo. Cuarenta y cinco ratas se dividieron al azar en grupos simulados SCIRI y SCIRI + GRg1. En los últimos dos grupos, el modelo SCIRI se realizó mediante la fijación de la aorta abdominal seguida de la restauración del suministro de sangre. Antes de modelar, el grupo SCIRI + GRg1 se trató con 10 mg/kg de GRg1 durante siete días. Después de 6, 12 y 24 h de reperfusión se evaluó la función motora de las extremidades posteriores y se determinaron los índices de estrés oxidativo y de respuesta inflamatoria en los tejidos de la médula espinal. Los resultados mostraron que en cada punto de tiempo después de la reperfusión, en comparación con el grupo SCIRI, en el grupo SCIRI + GRg1 el puntaje BBB, Basso, Beattie y Bresnahan, aumentó significativamente ($P < 0.05$), la actividad de superóxido dismutasa de la médula espinal aumentó significativamente ($P < 0.05$), y los niveles de tejido de la médula espinal malondialdehído, factor de necrosis tumoral α, interleucina 1β y factor nuclear kappa-B disminuyeron significativamente ($P < 0.05$). En conclusión, el pretratamiento con GRg1 ejerce efecto neuroprotector en ratas con SCIRI. Los efectos protectores pueden estar mediados por su resistencia al estrés oxidativo y la respuesta inflamatoria.

*KEY WORDS:* Ginsenoside Rg1, spinal cord. ischemia-reperfusion, rats, SOD, TNF-α, NF-κB

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