



Ameliorative Effect of Salidroside on Chronic Fatigue Syndrome in Rats and the Underlying Mechanism

Haiyan CHEN¹ #, Mingyang WU² #, Chenxi JIN³, Shengjie XING⁴,
Qinqin FENG⁵, Yujie ZHAO⁶, Helei LI⁷ & Jie JIN⁸ *

¹ Department of Geriatrics, ⁸ Department of Encephalopathy, The First Affiliated Hospital of Henan University of Traditional Chinese Medicine, Zhengzhou, China

² Department of Traditional Chinese Medicine Inheritance Studio, Henan Province Hospital of Traditional Chinese Medicine, Zhengzhou, China

³ Queen Mary's School, Nanchang University, Nanchang, China

⁴ Department of Neurorehabilitation, Luoyang Orthopedic-Traumatological Hospital of Henan Province, Luoyang, China

⁵ Department of Internal Medicine-Neurology, Shangqiu Central Hospital, Shangqiu, China

⁶ Department of Rehabilitation Medicine, The First Affiliated Hospital of Henan Polytechnic University, Jiaozuo, China

⁷ Department of Rehabilitation Medicine, Zhengzhou Yihe Hospital Affiliated to Henan University, Zhengzhou, China

SUMMARY. This study aimed to investigate the effect of salidroside on chronic fatigue syndrome (CFS) in rats and the underlying mechanism. Fifty SD rats were randomly divided into normal, model, and low-, middle- and high-dose salidroside groups, 10 rats in each group. The CFS model was established in later four groups. The later three groups were treated with 50, 100, and 200 mg/(kg.day) salidroside, respectively. After treatment, compared with model group, the CFS manifestations in salidroside groups were significantly alleviated. In addition, after treatment, compared with model group, in middle- and high-dose salidroside groups the body weight, exhausting swimming time and square-crossing number in salidroside groups were significantly increased ($P < 0.01$), the static tail-hanging time was significantly decreased ($P < 0.01$), and the skeletal muscle mitogen-activated protein kinase 1/2 (MEK1/2) and extracellular signal-regulated protein kinase (ERK1/2) contents were significantly increased ($P < 0.01$). In conclusion, salidroside can significantly ameliorate the CFS in rats. The mechanism may be related to its regulation of MEK/ERK signal pathway in skeletal muscle.

RESUMEN. Este estudio tuvo como objetivo investigar el efecto del salidroside sobre el síndrome de fatiga crónica (SFC) en ratas y el mecanismo subyacente. Cincuenta ratas SD se dividieron aleatoriamente en grupos de salidroside normales, modelo y de dosis baja, media y alta, 10 ratas en cada grupo. El modelo CFS se estableció en cuatro grupos posteriores. Los tres grupos posteriores fueron tratados con 50, 100 y 200 mg/(kg.día) de salidroside, respectivamente. Después del tratamiento, en comparación con el grupo modelo, las manifestaciones de SFC en los grupos de salidroside se aliviaron significativamente. Además, después del tratamiento, en comparación con el grupo modelo, en los grupos de salidroside de dosis media y alta, el peso corporal, el tiempo de natación agotador y el número de cruces cuadrados en los grupos de salidroside aumentaron significativamente ($P < 0.01$), el tiempo de suspensión de la cola estática disminuyó significativamente ($P < 0.01$) y los contenidos de proteína quinasa 1/2 activada por mitógeno del músculo esquelético (MEK1/2) y los contenidos de proteína quinasa regulada por señal extracelular (ERK1/2) aumentaron significativamente ($P < 0.01$). En conclusión, el salidroside puede mejorar significativamente el SFC en ratas. El mecanismo puede estar relacionado con su regulación de la vía de señal MEK/ERK en el músculo esquelético.

KEY WORDS: chronic fatigue syndrome, MEK1/2, ERK1/2, rats, salidroside.

Contributed equally

* Author to whom correspondence should be addressed. E-mail: jinjiezz8@163.com