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Scoparone Attenuates Allergic Rhinitis in Rats through Regulating Th1/Th2 Imbalance and Inhibiting TLR4/NF-κB Signaling Pathway

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***SUMMARY*. The aim of this work was to investigate the effects of scoparone on allergic rhinitis (AR) in rats and explored the related mechanism. Sixty Wistar rats were randomly divided into normal control (NC), AR, and low-, middle-, and high-dose scoparone groups, with 12 rats in each group. In latter four groups, the AR model was constructed by intraperitoneal injection with ovalbumin aluminum hydroxide suspension, followed by bilateral intranasal drip of ovalbumin normal saline solution. During the modeling, the latter three groups were treated with 0.815 mmol/L scoparone solution by intraperitoneal injection, with dose of 5, 10, and 20 mL/kg, respectively. At the end of experiment, compared with AR group, in middle- and high-dose scoparone groups, the behavioral score was significantly decreased, the serum IgE level was significantly decreased, the serum interferon-γ level was significantly increased, the serum interleukin-4 and interleukin-5 levels were significantly decreased, and the nasal mucosa tissue Toll-like receptor 4 (TLR4) and nuclear factor-kappa B (NF-κB) p65 protein expression levels were significantly decreased (all $p < 0.05$). In conclusion, scoparone may attenuate the AR in rats through regulating the imbalance of Th1 and Th2 immune response and inhibiting the TLR4/NF-κB signaling pathway.**

RESUMEN. El objetivo de este trabajo fue investigar los efectos de la scoparona en la rinitis alérgica (AR) en ratas y explorar el mecanismo relacionado. Sesenta ratas Wistar se dividieron aleatoriamente en grupo control normal (NC), AR y grupos de escoparona de dosis baja, media y alta, con 12 ratas en cada grupo. En los últimos cuatro grupos, el modelo AR se construyó mediante inyección intraperitoneal con suspensión de hidróxido de aluminio de ovoalbúmina, seguido por goteo intranasal bilateral de solución salina normal de ovoalbúmina. Durante el modelado, los últimos tres grupos fueron tratados con solución de escoparona 0,815 mmol/L mediante inyección intraperitoneal, con dosis de 5, 10 y 20 mL/ kg, respectivamente. Al final del experimento, en comparación con el grupo AR, en los grupos de escoparona de dosis media y alta, la puntuación de comportamiento disminuyó significativamente, el nivel de IgE en suero disminuyó significativamente, el nivel de interferón γ en suero aumentó significativamente, la interleucina-4 en suero y los niveles de interleucina-5 disminuyeron significativamente, y los niveles de expresión de la proteína p65 del receptor Toll-like de tejido de mucosa nasal 4 (TLR4) y el factor nuclear-kappa B (NF-κB) p65 disminuyeron significativamente (todos $p < 0.05$). En conclusión, la escoparona puede atenuar el AR en ratas al regular el desequilibrio de la respuesta inmune Th1 y Th2 e inhibir la vía de señalización TLR4/NF-κB.

KEY WORDS: allergic rhinitis, NF-κB, rats, scoparone, TLR4.

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