

Preparation of Dihydromyricetin from *Ampelopsis grossedentata* and its Preventive Effect on Postoperative Cognitive Dysfunction in Rats

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SUMMARY. In this study we prepared dihydromyricetin from *Ampelopsis grossedentata* and investigated the protective effect of dihydromyricetin on postoperative cognitive dysfunction (POCD) in rats and the mechanism. Puerarin with purity of 93.16% was extracted from *A. grossedentata*. Thirty-six rats were randomly divided into control, model and treatment groups. The treatment group was given 200 mg/kg dihydromyricetin for seven successive days. Then, the anesthesia and surgery model was established in model and treatment groups. After 24 h, the Morris water maze test was conducted, and the neuroactive substances, inflammatory factors and oxidative stress indexes in hippocampus were detected. Results showed that, compared with model group, in treatment group the escape latency was significantly decreased, the original quadrant residence time was significantly increased, the hippocampal brain-derived neurotrophic factor, nerve growth factor, neurotrophic factor-3 and acetylcholine levels were significantly increased, the hippocampal tumor necrosis factor α ; interleukin 6, interleukin 1 β , and malondialdehyde levels were significantly decreased, and the hippocampal superoxide dismutase and glutathione levels were significantly increased (all $p < 0.05$). In conclusion, dihydromyricetin can prevent the POCD in rats receiving propofol anesthesia. The mechanism may be related to its reducing the inflammatory response and oxidative stress in hippocampus.

RESUMEN. En este estudio preparamos dihidromiricetina a partir de *Ampelopsis grossedentata* e investigamos el efecto protector de la dihidromiricetina sobre la disfunción cognitiva posoperatoria (POCD) en ratas y el mecanismo. La puerarina con una pureza del 93,16% se extrajo de *A. grossedentata*. Treinta y seis ratas se dividieron aleatoriamente en grupos de control, modelo y tratamiento. El grupo de tratamiento recibió 200 mg/kg de dihidromiricetina durante siete días sucesivos. Luego se estableció el modelo de anestesia y cirugía en modelos y grupos de tratamiento. A las 24 h se realizó la prueba del laberinto de agua de Morris y se detectaron las sustancias neuroactivas, los factores inflamatorios y los índices de estrés oxidativo en el hipocampo. Los resultados mostraron que, en comparación con el grupo modelo, en el grupo de tratamiento la latencia de escape disminuyó significativamente, el tiempo de residencia del cuadrante original aumentó significativamente; el factor neurotrófico derivado del cerebro del hipocampo, el factor de crecimiento nervioso, el factor neurotrófico-3 el factor α de necrosis tumoral del hipocampo y los niveles de acetilcolina aumentaron significativamente. Los niveles de interleucina 6, interleucina 1 β y malondialdehído disminuyeron significativamente, y los niveles de superóxido dismutasa y glutatión del hipocampo aumentaron significativamente (todos $p < 0,05$). En conclusión, la dihidromiricetina puede prevenir el POCD en ratas que reciben anestesia con propofol. El mecanismo puede estar relacionado con la reducción de la respuesta inflamatoria y el estrés oxidativo en el hipocampo.

KEY WORDS: anesthesia, dihydromyricetin, postoperative cognitive dysfunction, propofol.

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