عنوان مقاله:

Effects of Melissa officinalis Alcoholic Extract on Kidney Tissue and Apoptosis Gene Expression in a Wistar Rat Model With Spinal Cord Injury

محل انتشار:

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خلاصه مقاله:

Background: Spinal cord injury (SCI) is a severe neurological condition that can cause widespread inflammation, affecting vital organs, such as the kidneys. The kidneys are essential for filtering waste and maintaining blood components. This condition poses a serious threat to the person's life. Additionally, studies have demonstrated that the alcoholic extract of Melissa officinalis, known for its ability to protect the nervous system, may be utilized in treating neurological disorders and secondary injuries associated with these conditions. This study investigates the effects of the alcoholic extract of M. officinalis on histological changes in kidney tissue and the expression of apoptosis-related genes (Bax, Bcl-۲, and CASP۳) in rats with SCI. Methods: A total of ۳۶ male Wistar rats, weighing between ۲۲۵ and ۲۵۰ g, were separated into four different groups for the experiment as follows: a control group (undergoing laminectomy), an SCI group, and two groups that received treatment with an alcoholic extract of the M. officinalis plant at doses of ۱۰۰ and ۱۵۰ mg/kg. The rats underwent SCI using the contusion method. Subsequently, ۲۴ h after the injury, the plant extract was given once daily for ۴ weeks. Kidney tissue samples were stained with hematoxylin-eosin for histomorphometric evaluation, and changes in gene expression were assessed using quantitative real-time polymerase chain reaction. Results: The concentrated form of the M. officinalis plant boosted the production of CASP۳, Bax, and the inflammatory factor TNF-α and decreased the expression of the Bcl-۲ gene. It also enhanced the structural and tissue alterations caused by SCI in the kidney tissue, improving kidney function for individuals with spinal cord injuries. Conclusion: The concentrated liquid from the M. officinalis plant can serve as a medicinal remedy for people with spinal cord injuries, and it may also enhance kidney function in those with similar injuries.

کلمات کلیدی:

Spinal cord injuries, Melissa, Apoptosis, Inflammation, Kidney