

عنوان مقاله:

Effects of Melatonin and Vitamin E on Peripheral Neuropathic Pain in Streptozotocin-Induced Diabetic Rats

محل انتشار:

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خلاصه مقاله:

Objective(s) Previous studies have indicated that diabetes mellitus might be accompanied by neuropathic pain. Oxidative stress is implicated as a final common pathway in development of diabetic neuropathy. Pharmacological interventions targeted at inhibiting free radical production have shown beneficial effects in diabetic neuropathy. The aim of this study was to investigate and compare the possible analgesic effects of melatonin and vitamin E in diabetic rats. Materials and Methods This study was performed on ۳۲ male Wistar rats divided into ۴ groups: control, diabetic, melatonin-treated diabetic and vitamin E-treated diabetic. Experimental diabetes was induced by intraperitoneal streptozotocin (۵۰ mg/kg) injection. Melatonin (۱۰ mg/kg, i.p.) and vitamin E (۱۰۰ mg/kg, i.p.) were injected for ۲ weeks after ۲۱st day of diabetes induction. At the end of administration period, pain-related behavior was assessed using ۰.۵% formalin test according to two spontaneous flinching and licking responses. The levels of lipid peroxidation as well as glutathione-peroxidase and catalase activities were evaluated in lumbosacral dorsal root ganglia. Results Formalin-evoked flinching and total time of licking were increased in both acute and chronic phases of pain in diabetic rats as compared to control rats, whereas treatment with melatonin or vitamin E significantly reduced the pain indices. Furthermore, lipid peroxidation levels increased and glutathione-peroxidase and catalase activities decreased in diabetic rats. Both antioxidants reversed the biochemical parameters toward their control values. Conclusion These results suggest that oxidative stress may contribute to induction of pain in diabetes and further suggest that .antioxidants, melatonin and vitamin E, can reduce peripheral neuropathic pain in streptozotocin-induced diabetic rats

کلمات کلیدی:

Diabetes, Melatonin, Oxidative stress, Pain, Peripheral neuropathy, Vitamin E

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