عنوان مقاله:

Preparation and antioxidant evaluation of chitosan hydrogel loaded with selenium nanoparticle in spinal cord injury-induced rat

محل انتشار:

اولین همایش بین المللی علوم و فناوری نانو (سال: 1399)

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خلاصه مقاله:

Traumatic spinal cord injury (SCI) is one of the major injuries to the central nervous system. The progressive wave of secondary injury in SCI is the leading cause of complications in patients with spinal cord injury. Oxidative stress is considered one of the hallmarks of the secondary phase of SCI and can therefore reduce oxidative stress by enhancing a number of cellular antioxidants such as superoxide dismutase, glutathione peroxidase, and catalase with antioxidants. Therefore, the design and topical application of chitosan hydrogel-loaded control-release drug delivery system with selenium nanoparticles in rats with spinal cord injury and evaluation of antioxidant changes in nerve tissue was considered as the aim of the present study. The activity of some antioxidant enzymes was measured in the spinal cord tissue. The results showed that malondialdehyde changes in all three groups were significantly increased after spinal cord injury, and these alternations were greater on days 3 and 7 postoperatively due to peroxidation in the control group compared to the other groups. However, administration of chitosan hydrogel alone and chitosan hydrogel loaded with selenium nanoparticles had no significant effect on glutathione peroxidase activity. There was no significant difference between the three groups in the level of catalase activity. Superoxide dismutase activity increased in all groups; but this increase was significantly greater in the positive and treatment control groups than in .the negative control group

کلمات کلیدی:

Oxidative Stress, Selenium Nanoparticles, Chitosan Hydrogel, Traumatic spinal cord injury