Protective effects of Saffron hydroalcoholic extract against renal tissue damages induced by ischemia-reperfusion in rats

Houshang Najafi¹, Leila Mahmoudzadeh²*, Darioush Shakibaei¹

¹. Medical Biology Research Center, Faculty of Medicine, Kermanshah University of Medical Sciences, Kermanshah, Iran. 2. Hamedan Branch, Islamic Azad University, Hamedan, Iran.

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Abstract

Background: The aim of this study was to investigate the protective effects of saffron hydroalcoholic extract against tissue damages induced by renal ischemia/reperfusion.

Methods: In this experimental study, 40 male rats were randomly divided into 5 groups; 1. sham group which underwent surgery with no vessel occlusion and passed equivalent reperfusion period, 2. Ischemia/reperfusion group which received solvent of extract and went through surgery, bilateral renal ischemia for 30 min and 24-h reperfusion period (I/R). The other three groups underwent ischemia/reperfusion receiving saffron extracts of 5, 10 or 20 mg/kg/ip, respectively. At the end of reperfusion period, the left kidney tissue was collected and stained with hematoxylin-eosin for histological studies. Statistical analysis was performed using one-way ANOVA and Mann-Whitney tests.

Results: Following ischemia/reperfusion, the size of Bowman's space increased significantly (P<0.001). In addition, cell necrosis in the tubules of the cortex and outer medulla, vascular congestion and tubular casts in the outer and inner medulla increased. However, the number of RBCs in glomerular capillaries decreased. Administration of saffron extract could significantly improve all the injuries by all three doses. Nevertheless, the effect of 20 mg dose was smaller.

Conclusion: Intraperitoneal administration of saffron hydroalcoholic extract has protective effects against tissue damages induced by 30 min ischemia and 24-h reperfusion in the rat’s kidney.

Keywords: Ischemia/reperfusion, saffron, tissue damage, rat.


* Corresponding author: Hamedan Branch, Islamic Azad University, Hamedan, Iran. Tel: +98 831 7224315
E-mail: laila.yahag@gmail.com

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