

عنوان مقاله:

The Protective Role of Gallic Acid Pretreatment On Renal Ischemia-reperfusion Injury in Rats

محل انتشار:

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خلاصه مقاله:

Background: Renal ischemia-reperfusion injury (RIR) occurs when there is a temporary restriction of blood flow to the kidneys followed by an influx of blood, re-oxygenating the tissues. This occurs as a severe complication of major surgery. This process causes significant damage to the tissues and is responsible for the development of acute kidney injury (AKI), a life-threatening condition with high mortality rates. Here, we evaluated the potential protective effects of the antioxidant, gallic acid (GA), on RIR in an in vivo rat model. Methods: Adult male Sprague Dawley rats were randomly divided into three groups: group 1 (control, n = 8), group 2 (Ischemia-reperfusion (IR) with no-treatment, n = 7), and group 3 (IR + daily GA 100 mg/kg i.p, n = 7). The abdomens of the rats in the control group were opened during the surgical procedure, then sutured closed. GA pretreatment began daily 15 days prior to inducing RIR. To induce RIR, the umbilical arteries were obstructed on both sides and clamped with mild pressure for 45 min. Following the 45 min ischemia, the clamps were removed to allow for the induction of reperfusion. The reperfusion phase was 24 hours. Results: Following IR, the serum levels of urea and creatinine significantly increased compared to the controls. Pretreatment with GA was observed to reduce urea and creatinine levels following IR. However, this decrease was not statistically significant. The serum and renal levels of malondialdehyde (MDA) in the IR group was significantly elevated compared to the control group. Conversely, glutathione (GSH) levels and the activity of glutathione peroxidase (GPX) significantly decreased in the IR group compared to controls. Our findings

show GA pretreatment to significantly improve the levels of renal MDA, serum GSH, and GPX activity following RIR.
Conclusions: Our findings highlight the protective role for GA in mitigating the damage caused by RIR and its applications as a potential treatment

کلمات کلیدی:

.Antioxidant enzymes, Gallic acid, Renal functional markers, Renal ischemia-reperfusion

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