15th International Congress of Histochemistry and Cytochemistry

"From Molecules to Diseases"

ABSTRACT BOOK



ICHC 2017

Kervansaray Lara Hotel, ANTALYA

May 18 - 21, 2017

Turkey

www.ichc2017.com

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10.5505/2017ichc.PP-268 [Pathology and clinical medicine]

Riboflavin Treatment Reduces Apoptosis and Oxidative DNA Damage in a Ischemia/Reperfusion Induced Renal Damage in Rats

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INTRODUCTION: Oxygen free radicals are important components involved in the pathophysiological processes observed duringi schemia/reperfusion (I/R). Riboflavin is an easily absorbed micronutrient that plays an important role in maintaining health in humans and animals. This study was designed to determine the possible protective effect of riboflavin (RIBO) on renal I/R injury.
MATERIAL-METHODS: Wistar albino rats weighing 200-300 gr were divided into 3 groups of 7 animals per group. Riboflavin (25 mg/kg, orally) or vehicle was administered for one week as pretreatment and then to induce I/R injury, rats were unilaterally nephrectomized and subjected to 45 minutes of renal pedicle occlusion followed by 6 hours of reperfusion. At the end of the treatment period, all rats were decapitated. Kidney samples were taken for histological examination or determination of the renal malondialdehyde (MDA), glutathione (GSH) and 8-hydroxy-2<-deoxyguanosine (8-OHdG) levels and myeloperoxidase (MPO) and caspase-3 activities. Data were analyzed statistically.
RESULTS: I/R caused a significant decrease in tissue GSH level, which were accompanied by significant increases in MDA and 8-OHdG levels and MPO and caspase-3 activities. However, riboflavin treatment reversed these parameters. I/R group showed degenerated renal corpuscles with dilated Bowman space and cellular debris, atrophic glomeruli, degeneration in tubular cells with luminal debris and severe interstitial bleeding in renal parenchyma. However, RIBO+I/R group showed moderately decreased kidney damage.
CONCLUSION: Findings of the present study suggest that riboflavin exerts renoprotective effects via its radical scavenging, antioxidant and antiapoptotic activities, which appear to involve the inhibition of tissue neutrophil infiltration.

Keywords: Ischemia/reperfusion, riboflavin, oxidative damage