

The assesement of Calcitriol effect on the expression of Hsp 70 and caspase 3 in renal ischemia- reperfusion injury in rats

Abstract

Background: Kidney ischemia reperfusion (IR) contributes to the development of acute kidney injury. The hypoxic conditions in ischemic damage lead to oxidative stress and apoptotic cell death.

Aim: In this study, we investigated the effects of calcitriol on the expression of Hsp 70 and caspase 3 in renal IR.

Methods and materials: Wistar rats were divided into 3 groups (N=6) including the control, IR, and Vit D + IR groups. The animals were unilaterally nephrectomized and subjected to 45 minutes of renal pedicle occlusion followed by 24 h reperfusion. Calcitriol administered prior to ischemia. After 24 hours reperfusion, the kidney samples were collected for the detection of heat shock protein 70 (hsp70) and caspase-3 expression levels.

Results: Kidney IR significantly increased the expression of hsp70 and capase-3 and blood urea nitrogen (BUN)-Cr levels. Treatment with calcitriol significantly decreased the BUN-Cr levels and hsp70 and caspase-3 expression.

Conclusion: It seems that calcitriol administration could protect the kidney against IR injury.

Keywords: Caspase 3, Renal ischemia-reperfusion, Calcitriol, HSP70