

## **Pomegranate (*Punica granatum L.*) reduces endoplasmic reticulum stress induced by renal Ischemia/Reperfusion injury**

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### **Abstract:**

Ischemia-reperfusion (I/R) is one of the main causes of acute renal failure, leading to ROS generation and ensuing oxidative stress which result in unfolded/misfolded protein accumulation and its dependent response pathways generally known as unfolded protein response (UPR) in the Endoplasmic reticulum (ER). Herein, we studied the effects of renal I/R on the ER-stress genes expression, as well as concomitant effects of oral pretreatment with pomegranate (*Punica granatum L.*) pith and carpellary membrane (PPCM). An *in vivo* model of rat kidney I/R followed by conventional and real-time RT-PCR was used to evaluate the modulation of GRP78 and XBP1 as central UPR and ER-stress markers. Ischemia followed by reperfusion (60 and 150 minutes respectively) resulted in decreased antioxidant properties of plasma (lowered FRAP value) and GRP78 transcript levels. Oral administration of PPCM aqueous extract for 10 days with or without Ischemia (PPCM and PPCM/Isc groups respectively) was able to further decrease the GRP78 expression, while it increased the FRAP value. PPCM pre-treatment also reduced the XBP1 splicing in PPCM/Isc compared to Isc group.

### **Results:**

These results suggest that UPR is activated during oxidative insults induced by I/R, while PPCM can reduce I/R -induced ER stress in kidneys via antioxidant defense mechanisms.

### **Keywords:**

ER stress, Pomegranate, Ischemia/Reperfusion, Unfolded protein response

