

## SUMMARY

### THE PROBABLE PROTECTIVE EFFECT OF LYCOPENE ON HYPOKSIA INDUCED OXIDATIVE STRESS IN RATS

**Introduction and Aim:** Today nephron sparing surgery with early diagnosis provides effective curative therapy for patients with localized renal cell carcinoma. With technological developments laparoscopic surgery usually used on this tumors. On surgery (OPN-LPN) when renal arter temporary clamping renal ischemia-reperfusion injury occurs (temporary dialysis for patients dependent on ure and cr increased ). On this condition nephrotoxicity improved especially have a soliter kidney or determinate kidney parancime patients. The present study was designed to invastigate the possiple protective effects of lycopene against hypoksia induced renal damage. Lycopene is the one of the potent carotenoid antioxidant agent to take on foods which couldn't synthesis on human body.

**Material and Method:** Twelve rats are included to study from Adnan Menderes University Veterinary Faculty Laboratories, serum ure, cr, Na and K levels are detected for all rats. Famale wistar rats were diveded into two groups of six rats in each one; first group served as control, the other group were treated two days of orally lycopene (4mg/kg per day) before surgery. All wistar rats were subjected to right nephrectomy and after abdominal aorta clamping for 45 minutes for ischemia reperfusion injury. After 24 hours blood samples for taken again analysis of serum ure, cr, Na and K levels. And done left nephrectomy for biochemical and histopathological evaluation on Adnan Menderes University Medical Faculty Biochemistry and Pathology Laboratories.

**Findings:** Mean of control group pre ischemia ure levels was  $57,3 \pm 16,2$  (34-84) mg/dL, post ischemia ure levels was  $148,8 \pm 72,8$  (46-229) mg/dL ( $p=0,046$ ). Mean of control group pre ischemia cr levels was  $0,45 \pm 0,083$  (0,4-0,6) mg/dL, post ischemia cr levels was  $1,17 \pm 0,97$  (0,5-3) mg/dL ( $p=0,027$ ). Mean of control group pre ischemia Na levels was  $141,5 \pm 3,37$  (136,7-145) mmol/L, post ischemia Na levels was  $133,6 \pm 7,26$  (122-143) mmol/L ( $p=0,028$ ). Mean of lycopene group pre ischemia ure levels was  $61,2 \pm 16,9$  (37-86) mg/dL, post ischemia ure levels was  $159 \pm 78,8$  (28-241) mg/dL ( $p=0,046$ ). Mean of lycopene group pre ischemia cr levels was  $0,45 \pm 0,055$  (0,4-0,5) mg/dL, post ischemia cr

levels was  $1,37 \pm 0,87$  (0,4-2,8) mg/dL ( $p=0,046$ ). There was no significant between pre ischemia Na levels and post ischemia Na levels on lycopene group. Mean of control group pathological score levels was  $2,17 \pm 0,41$  (2-3), mean of lycopene group pathological score levels was  $1,55 \pm 0,55$  (1-2) ( $p < 0,05$ ). Mean of control group tissue MDA levels was higher than lycopene group ( $p > 0,05$ ). Mean of lycopene group tissue GSH-Px levels was higher than control group ( $p > 0,05$ ).

**In conclusion:** Ischemia reperfusion induced oxidative stress and nephrotoxicity caused significant increases in pathological score. And elevated tissue MDA levels, serum ure, cr, Na levels. Post ischemia serum Na levels was protected on lycopene group. For all results a natural antioxidant lycopene might have protective effects against hypoxia induced nephrotoxicity and utilizable on OPN and LPN.

**Key words:** Lycopene, renal ischemia, ischemia reperfusion injury, open/laparoscopic partial nephrectomy.