

PE48 May quercetin protect the kidney against ischemia/reperfusion injury? A stereological study in a rodent model

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Introduction & Objectives: Warm renal ischemia (WRI) is performed in robotic partial nephrectomy, which is considered the gold standard for the treatment of small renal tumors. This intervention leads to some damage to the remaining parenchyma. Studies point to flavonoids as renal protectors, even associated with ischemia/reperfusion. One of those is quercetin, and its protective effects on the kidney and other organs have been evaluated under qualitative conditions, but there are still no quantitative results of the treatment with this flavonoid after WRI. The objectives of this study are to quantitatively evaluate renal cortex morphology after warm ischemia and the possible protective effect of quercetin.

Materials & Methods: We used 38 male Wistar rats at aging 9 weeks divided into 4 groups: Sham (S) - 60 minutes laparotomy; Sham Quercetin (SQ) - sham group treated with quercetin; Ischemia (I) - group submitted to renal ischemia; Ischemia Quercetin (IQ) - group submitted to quercetin-treated renal ischemia. The SQ and IQ groups received 50 mg/kg of quercetin administered by gavage for 3 days before and after laparotomy, and intraperitoneally 60 minutes before the surgery. The I and IQ groups had their left renal artery and veins clamped for 60 minutes. The animals were euthanized 4 weeks after the surgery, the blood was collected for serum urea and creatinine determination and kidneys were collected for histomorphometric analysis. The renal volume, the cortex-non-cortex areas ratio (C/NC), glomerular volume density (Vv[Glom]), weighted mean glomerular volume (VWGV) and number of glomeruli per kidney (Nv[Glom]) were evaluated. The results were compared by one-way ANOVA with Bonferroni post-test (significant when the value of $p < 0.05$).

Results: In Group I, serum urea was higher than in group S by 9.6%, and IQ Group had no difference when compared to sham groups ($p < 0.01$). The C/NC of Group IQ was higher than group I in 4.7%, and Group I was lower in relation to other groups ($p < 0.01$). The Vv[Glom] of the IQ Group was increased in 25.2% when compared to I Group, which had been decreased when compared to all groups ($p < 0.01$). The Nv[Glom] of Group IQ was higher in 22% when compared to Group I, which was diminished in relation to other groups ($p < 0.01$). Renal volume and VWGV did not present significant differences among groups.

Conclusions: Arteriovenous warm renal ischemia promotes considerable damage to the kidney and previous administration of quercetin has protective effects to the renal cortex, suggesting that this flavonoid can be used preventively in robotic partial nephrectomy. Supported by grants from CNPq e Faperj.