

BENEFICIAL EFFECTS OF QUERCETIN ON RAT URINARY BLADDER AFTER CISPLATINUM TREATMENT

Hypothesis / aims of study

Cisplatin treatment leads to cytotoxic events and generates oxidative stress, which has deleterious effects on the function of several organ systems, including the urinary bladder. The present study was designed to investigate the putative beneficial effect of quercetin (QT) against cisplatin-induced bladder damage.

Study design, materials and methods

Twenty-eight adult male Sprague Dawley rats were included in the study. Sixteen rats were administered intraperitoneally (i.p.) single dose cisplatin 7 mg/kg and divided in to 2 groups: The first group (n=8) received saline i.p., whereas the second group (n=8) fed orally with 20 mg/kg QT, respectively, for 21 days. The remaining 12 rats served as the control group after i.p. saline, where 6 treated with QT.

After decapitation, bladder strips were placed in organ bath and isometric contractions to carbachol (10^{-8} to 10^{-4} M) were recorded. In order to examine oxidative tissue injury, malondialdehyde (MDA), 8-hydroxydeoxyguanosin (8-OHdG) and glutathione (GSH) levels and superoxide dismutase (SOD) and caspase-3 activities and caspase-3 protein expression in bladder tissues were measured along with histological evaluations.

Results

In the cisplatin-treated bladders, the contractile responses were lower than those of the control group and were reversed by treatment with QT (figure 1). On the other hand, increase in MDA and 8-OHdG levels (figure 2), and caspase-3 protein expression and caspase 3 activities of tissues in the cisplatin group were significantly reversed by QT treatment (figure 3). Furthermore, treatment with QT also prevented the depletion of tissue GSH levels and SOD activity seen in the cisplatin group (figure 4).

Interpretation of results

According to the results, cisplatin treatment leads to cytotoxic damage in urinary bladder, which has been reversed with QT treatment through its anti-inflammatory and antioxidant effects.

Concluding message

Quercetin exerts beneficial effects against cisplatin-induced damage on bladder through its anti-inflammatory and antioxidant effects.

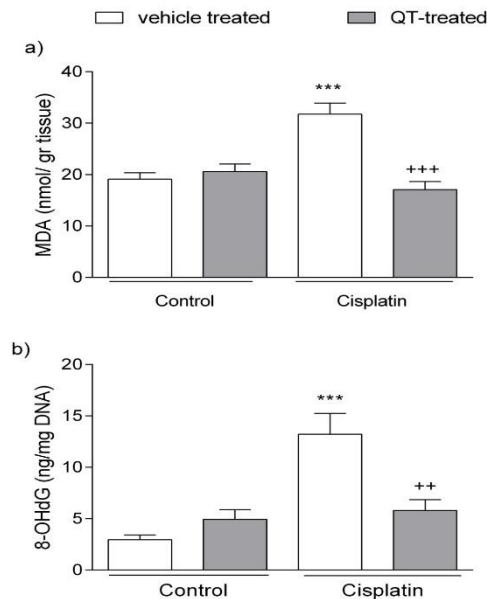
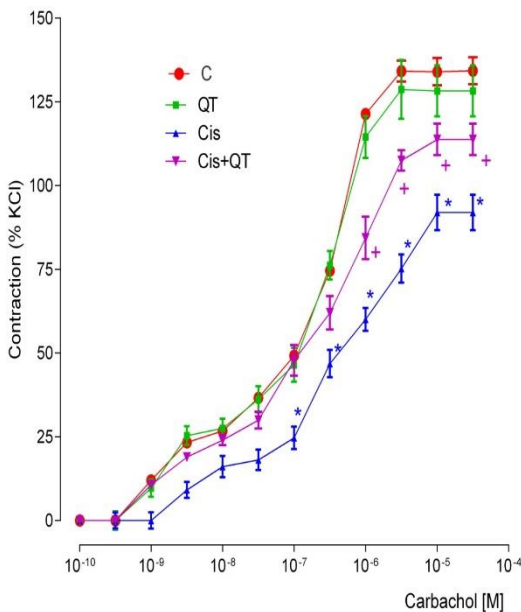


Figure 1. Concentration-response curves

Figure 2. a) Malondialdehyde (MDA) and b) 8-hydroxydeoxyguanosin (8-OHdG) levels

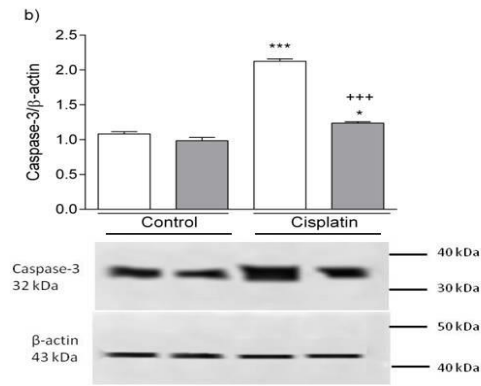
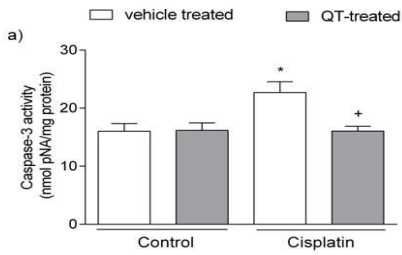


Figure 3. (A) Caspase 3 activity and (B) caspase-3 protein expression by Western blotting

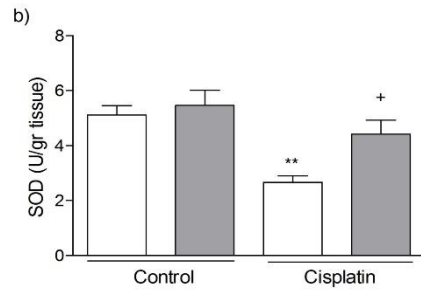
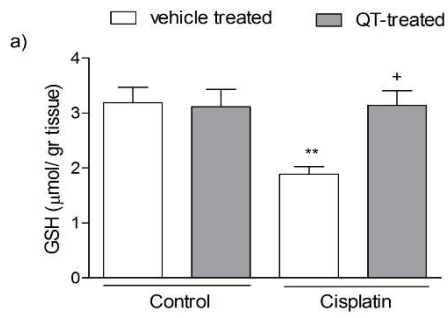


Figure 4. a) Glutathione (GSH) levels and b) superoxide dismutase (SOD) activity

Disclosures

Funding: None **Clinical Trial:** No **Subjects:** ANIMAL **Species:** Rat **Ethics Committee:** Marmara University Laboratory Animals Ethical Committee