

Carvedilol Protects Against the Mitochondrial Oxidative Damage Induced by Cisplatin in Rat Kidney

Carvalho Rodrigues, M. A.¹, Martins, N. M.¹, Santos, N. A. G.¹, Ferreira, D. A. S.¹, Santos, A. C.¹, Curti C.²

¹Dep. de Análises Clínicas, Toxicológicas e Bromatológicas, FCFRP, USP, SP, Brazil; ² Dep. de Física e Química, FCFRP, USP, SP, Brazil.

Introduction and Objectives: Nephrotoxicity is the major dose-limiting factor of cisplatin chemotherapy. Reactive oxygen species generated in mitochondria are thought to be the main cause of the cellular damage in such injury. The present study examined, in vivo, the protective potential of carvedilol, an anti-hypertensive drug with antioxidant properties, against cisplatin induced renal damage. **Materials, Methods:** Male rats were divided into 4 groups (n = 6). Group 1 (Control) received injections of saline and DMSO; group 2 (CV + CISP) was treated with carvedilol immediately before the injection of cisplatin followed by two daily injections of carvedilol; group 3 (CV) was treated with carvedilol for 3 days; group 4 (CISP) received only one injection of cisplatin. **Results:** Carvedilol prevented all the following alterations induced by cisplatin: decrease (a) in the respiratory control ratio (RCR), (b) in calcium uptake and (c) in the eletrochemical potential; as well as increase in the plasmatic levels of (d) creatinine and (e) blood urea nitrogen (BUN). The results of the CV group were similar to control. **Conclusion:** The treatment with carvedilol was able to protect against the renal mitochondrial dysfunction in rats treated with cisplatin; therefore reducing the renal damage. Carvedilol might be a potential candidate for the protective adjuvant therapy during cisplatin chemotherapy.

Keywords: mitochondria, cisplatin, carvedilol, nephrotoxicity, ROS.
(Supported by: FAPESP)