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The Response of the Adrenergic System in the Cadmium-Induced Hypertensive Rat

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Abstract

Previous investigators, using an in vitro system, have shown that cadmium inhibits neuronal uptake of norepinephrine (NE). The current studies were performed to determine if the adrenergic system is altered in the cadmium-induced hypertensive rat. The results show that the Fischer and Sprague-Dawley rats develop hypertension, whereas the Wistar normotensive and Wistar hypertensive rats develop hypotension when exposed to 5 ppm of cadmium via drinking water. Results from these studies also show that in the cadmium-induced hypertensive rat, plasma NE is significantly elevated and that plasma clearance of [3H]NE is significantly reduced. However, the changes in NE metabolism observed in the hypertensive rats were also observed in hypotensive rats. Furthermore in the Wistar strain, renal artery cadmium levels were significantly higher than observed in the other two strains. We thus, suggest that the direction of change in blood following cadmium treatment is associated with both the plasma level of norepinephrine and the arterial level of cadmium.