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A Possible Mechanism for Cadmium-Induced Hypertension in Rats

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Abstract

The mechanism of cadmium-induced hypertension was explored by measuring noradrenaline metabolism. Cadmium Image was shown to inhibit both monoamine oxidase and catechol-Image -methyltransferase, the two enzymes which inactivate the neurotransmitters noradrenaline and adrenaline. However, rats which were injected or fed (via the drinking water) with cadmium showed that, among the tissues surveyed, these two enzymes were inhibited significantly only in the aorta. Image , cadmium was found to inhibit noradrenaline binding to membranes from the heart, lung, and kidney, while stimulating binding to aortic membranes, which suggests that the effects may be specific. These results suggest that, in the aorta, cadmium may inhibit the two catabolic enzymes of noradrenaline, while at the same time stimulating noradrenaline-binding. Thus the effects of noradrenaline on vascular smooth muscle would be increased as well as prolonged.