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Restoration of Erectile Capacity in Normotensive Aged Rats by Modulation of Angiotensin Receptor Type 1

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We investigated the effects of systemic modulation of angiotensin 2 on the erectile dysfunction of aged rats. Young and aged (18 months old) male Sprague-Dawley rats were either treated with daily administration of losartan (angiotensin type 1 receptor antagonist, 30 mg/kg/d PO) or the drug vehicle (control) for 4 weeks (n = 6 in each group). We monitored the intracavernosal pressure (ICP) after administration of apomorphine (100 µg/kg), and we measured the degree of lipid peroxidation of corpus cavernosum and the cavernosal protein expression by an immunoblot technique. Compared to the control young rats, the control aged rats showed significant impairment of erectile function; however, losartan treatment effectively restored the erectile function of aged rat to a level similar to that of young rats. Despite the systemic pressure-lowering effect of the drug, the peak ICP was not significantly reduced; rather, the ICP/systemic arterial pressure (SAP) was increased by the losartan treatment. Measurement of lipid peroxidation revealed the fact that the drug was effective in diminishing oxidative stress. While the losartan treatment significantly enhanced the expression of endothelial nitric oxide synthase (eNOS), it had no effect on the expression of transforming growth factor (TGF)-ß1. The results obtained indicated that alteration of the renin-angiotensin system might be implicated in the erectile dysfunction of elderly males, and modulation of this system may be of great therapeutic value.

Key words: Erectile dysfunction, Sprague-Dawley rat, losartan

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