URINARY RENIN EXCRETION IS AUGMENTED IN CHRONIC ANGIOTENSIN II-INFUSED SPRAGUE-DAWLEY HYPERTENSIVE RATS.


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Renin is upregulated in principal cells of the collecting ducts of angiotensin II (AngII)-dependent hypertensive rats; however it remains unclear if increased distal nephron-derived renin is secreted into the urine during AngII-dependent hypertension. Urinary renin (uRen), angiotensinogen (uAGT) and AngII (uAngII) excretion was measured in chronic AngII-infused male Sprague-Dawley rats [80 ng/min, SC minipumps for 14 d, n=5] and control, sham-operated rats [n=5]. Systolic blood pressures increased in the AngII rats by Day 5 and continued to increase throughout the study (Day 13; AngII: 175±10 vs. sham: 116±2 mmHg). Although plasma renin activity was suppressed in the AngII-infused rats (AngII: 0.3±0 vs. sham: 5.5±2 ng Ang I/ml/h); renin content in renal medullary tissues did not change (AngII:10,564±1,476 vs. sham: 9,438±1,588 ng Ang I/h/mg; p=ns). Excretion of uAGT and uAngII increased in the AngII rats compared to sham rats, respectively [uAGT (AngII:1107±106 vs. sham:60±26 ng/day); uAngII (AngII: 3813±431 vs. sham:2080±361 fmol/day)]. Importantly, uRen excretion rate at Day 13 was markedly increased in the AngII rats (AngII: 9±3 vs. sham: 1±1x10-5 Enzyme Units/day; p<0.05). Augmented uRen and uAGT may contribute to increased intrarenal AngII formation in AngII-dependent hypertensive rats.

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