SEX DIFFERENCES IN URINARY EXCRETION OF ANGIOTENSINOGEN (AGT) AND ANGIOTENSIN II (ANG II) IN SPRAGUE DAWLEY RATS DURING HIGH SALT DIET AND ANG II INFUSION

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We have found that urinary angiotensinogen (AGT) excretion (uAGT) differs between male (♂) and female (♀) Sprague Dawley (SD) rats on a normal salt diet (♂: 60±26 vs ♀: 4.5 ±0.2ng/day, p<0.05). In this study, we examined if the effects of a high salt (HS) diet on uAGT exhibits sexual dimorphism during Angiotensin (ANG) II dependent hypertension. Four groups of age-matched (8 weeks) male (n= 20) and female (n=17) SD rats were studied: 1) high salt diet (HS; 8%NaCl); 2) ANG II (80ng/min, sc; for 14 days); 3) ANG II + HS; 4) ANG II + HS + Candesartan. (CAND, 25 mg/L in drinking water). uAGT levels were measured by enzyme immunoassay. HS diet alone did not raise uAGT levels (♂: 107±23 vs ♀: 5±2ng/day) from baseline; however, AGT increased significantly during ANG II infusion (♂: 1107±1061 vs ♀: 206±74ng/day, p<0.01) and was augmented even further in ANG II + HS (♂: 4363±1673 vs. ♀: 8022±1300ng/day, p=ns). Candesartan ameliorated this effect with a better response in female than in male rats (♂: 240±28 vs. ♀: 10±4 ng/day, p< 0.01). The results demonstrate a sexual dimorphism in the uAGT excretion rate during baseline conditions and HS diet characterized by higher levels in the males. The augmentation of uAGT with HS + ANG II is ameliorated more effectively by ARB treatment in female ANG II hypertensive rats than in males.

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