

The Summer Undergraduate Research Fellowship (SURF) Symposium  
6 August 2015  
Purdue University, West Lafayette, Indiana, USA

## Angiotensin II-Induced Hypertension in Apolipoprotein E-Deficient Rats

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### ABSTRACT

Abdominal aortic aneurysms (AAAs) are characterized by a weakened vessel wall and a diameter 50% greater than normal. AAA are usually asymptomatic until they are near rupturing, which can be fatal if not treated immediately. Apolipoprotein E-deficient (ApoE) mice are commonly used as a model to study aneurysm growth. Our lab has created a similar model using rats, which are more similar to humans. This study focuses on the analysis of blood pressures collected from ApoE rats for comparison with a known mouse model. Five ApoE rats (1 female, 4 males) received subcutaneous implants of osmotic mini pumps that released a continuous flow of angiotensin II (AngII) at 200 ng/kg/min. AngII is a protein known to increase blood pressure by acting on the renin-angiotensin system. Systolic, diastolic, and mean arterial pressures were measured using a non-invasive tail cuff system (CODA, Kent Scientific). Measurements were taken before pump implantation and on days 3, 7, 14, 21, and 28 after implantation. Mean arterial pressure increased from  $133.8 \pm 21.2$  mmHg before pump implantation to  $169.4 \pm 20.3$  mmHg on day 28. Systolic and diastolic pressures rose in a similar manner. Although the blood pressure increased in a manner similar to the mice, no aneurysms were observed in any of the rats. This may be due to species differences that affect vessel thickness and metabolic rate. Further investigations will be needed to determine why ApoE rats become hypertensive due to AngII, but do not develop suprarenal dissecting aortic aneurysms.

### KEYWORDS

Aneurysms, Rats, Apolipoprotein E, Angiotensin II, Blood Pressure, Aorta