Fall 2024

Biochemistry and Molecular Biology Brown Bag Series

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"Effect of pioglitazone and canagliflozin on the cardiac renin angiotensin system and ADAM17 in db/db mice"

Tuesday, October 8, 2024

11:00 AM

Location 105 Biological Sciences Building

Lab: Khalid Elased, Ph.D.

Boonshoft School of Medicine
WRIGHT STATE UNIVERSITY

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https://science-math.wright.edu/biochemistry-and-molecular-biology

Abstract

Type 2 diabetes is associated with an increased risk of renal and cardiac complications. Despite availability of several antidiabetic medications, the cardiovascular outcomes remain unchanged. Activation of the renin-angiotensin system (RAS) is one of the critical factors in development of diabetic complications. Hyperglycemia causes an increase in Angiotensin II (Ang II). Angiotensin converting enzyme 2 (ACE2) and neprilysin (NEP) are angiotensin (1-7) forming enzymes. ACE2 was first cloned from heart failure patients and has cardioprotective and renoprotective properties. ACE2 is the functional receptor of SARS-Cov-2 virus, and it is elevated in heart failure patients. Combination of angiotensin receptor antagonism and NEP inhibition is a new therapeutic strategy for treatment of heart failure. Previous studies from our lab have demonstrated that ADAM17 significantly increases the shedding of ACE2 and NEP in urine, potentially worsening kidney and heart diseases in diabetic patients. The aim of this study is to investigate whether there is an alteration of cardiac NEP and ACE2 in db/db mice and assess the effects of pioglitazone and canagliflozin, beyond normalizing glycemia.