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## Hemoxygenase ameliorates diabetic cardiomyopathy by potentiating electrocardiographic and hemodynamic parameters in obese Zucker rats

Joseph Fomusi Ndisang

University of Saskatchewan, Canada

Deregulated insulin signaling is associated with progressive alterations in cardiac structure and function. We investigated the effects of the heme-oxygenase (HO) inducer, hemin, on cardiac dysfunction in obese Zucker rats, a model characterized by impaired insulin signaling. Administering hemin to obese Zucker rats enhanced insulin sensitivity and potentiated important components of insulin signal transduction pathway including IRS-1, PI3K and GLUT4. These were associated with the amelioration of several hemodynamic parameters including mean arterial pressure, arterial systolic pressure, +dP/dt and arterial diastolic pressure as well as electrocardiographic parameters related to the performance of the cardiac conduction system such as the PR-interval, QRS-duration, ST-segment and QT interval. Furthermore, hemin reduced LV-hypertrophy, abated diastolic/systolic LV-wall thickness, abolished cardiac fibrosis, suppressed inflammatory/oxidative mediators and attenuated extracellular matrix/pro-fibrotic proteins, whereas treatment with HO-blocker, stannous-mesoporphyrin, abolished the effects of hemin. We conclude that up-regulating the HO system with hemin improved altered cardiac structure and function in obese Zucker rats by attenuating inflammatory/oxidative insults, suppressing extracellular-matrix/profibrotic, while concomitantly potentiating insulin signaling and glucose metabolism.

### Biography

Joseph Fomusi Ndisang is an Associate Professor in the Department of Physiology of University of Saskatchewan, College of Medicine. He has completed his Postdoctoral training in Physiology at the University Of Saskatchewan, College of Medicine. He has received his PhD in Pharmacology & Toxicology from the University of Florence, Italy and received a Doctor of Pharmacy degree from University of Florence, Italy. He has got several distinguished awards and distinctions including: Associate Fellow of the Scientific Council of the International College of Angiology (2007).

[joseph.ndisang@usask.ca](mailto:joseph.ndisang@usask.ca)

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