

## ABSTRACT SUBMISSION FORM

LET'S TALK ABOUT

# SEX + GENDER

Exploring the role of sex and gender on health research



## CHR D 2020: Abstract Submission Form

### Submitter Name

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### Title

Berberine alleviates adiposity and cardiac dysfunction in offspring exposed to gestational diabetes mellitus.

### Background

The most robust risk factor for the development of type 2 diabetes in childhood is prior exposure to diabetes during gestation. Currently, there are few evidence-based strategies to attenuate the risk of metabolic syndrome in offspring exposed to gestational diabetes mellitus (GDM). Berberine (BBR) is an isoquinoline alkaloid extracted from Chinese herbs that exhibits glucose lowering properties. It has been used safely for centuries in humans.

### Objective

Our objective was to determine whether BBR treatment improves health outcomes in the mouse offspring of GDM dams.

### Methods

To induce GDM, dams were fed a high-fat/high sucrose diet (GDM, HF, 45% kcal fat) prior to breeding and throughout pregnancy and Lean control dams received a low-fat diet (Lean, LF, 10% kcal fat). The resulting offspring of Lean and GDM dams were randomly assigned a postnatal LF, HF or HF diet containing BBR (160 mg/kg/d) for 12 weeks.

### Results

We determined that BBR treatment of male offspring significantly reduced the body weight (~16%), % body fat (~41%) and gonadal fat pad mass (~56%) compared to HF-fed GDM offspring. BBR was similarly effective in reducing obesity in HF-fed female offspring with less % body fat (~57%) and gonadal fat pad mass (~70%). Furthermore, BBR treatment normalized fasting plasma insulin levels of female (~70%) and male (~55%) HF-fed offspring. Food consumption was altered between the experimental groups. Alternatively, BBR-treatment increased whole-body oxygen consumption (VO<sub>2</sub>), activity and heat production. Additionally, we determined that the male HF-fed GDM offspring developed a cardiomyopathy, characterized by increased intraventricular contraction time (~150%, IVCT), isovolumetric relaxation time

(~70%, IVRT), and reduced mitochondrial function (30%, spare capacity) compared to LF fed Lean controls. BBR treatment normalized heart function, and maintained mitochondrial function.

### **Conclusion**

Our data supports BBR as a potential pharmacotherapeutic approach to improve health outcomes in individuals exposed to GDM. (Supported by HSFC, CHRIM)

### **Theme:**

Basic Science

### **Do you have a table/figure to upload?**

No

### **Are you willing to participate in Goodbear's Den?**

No

### **Presenter Status:**

Post-Doctoral Fellows

### **What was your role in the project?**

Perform Experiments

## **Authors**

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