

The ZDF Rat as a Model of Type 2 Diabetes

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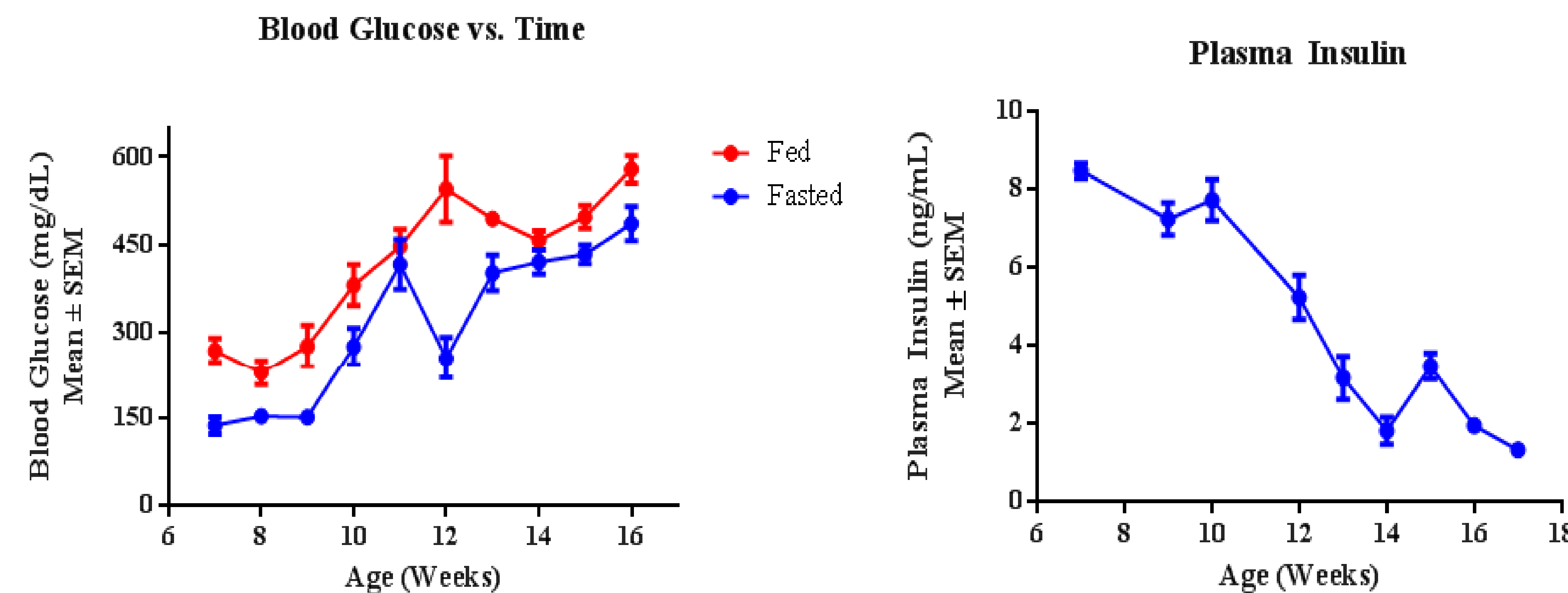
Abstract

The incidence of obesity and diabetes is reaching near epidemic proportions worldwide. Studies in appropriate animal models are very important in order to gain a better understanding of these diseases. Historically, rodents have been a mainstay of diabetes research, various mouse and rat models have been described that mimic aspects of obesity and obesity-driven diabetes. Because the ZDF is obese, hyperinsulinemic, and develops diet-dependent diabetes, it translates well to human disease. This presentation explores the development of the diabetic phenotype in the ZDF rat, demonstrates effects of standard anti-diabetic treatments on glucose homeostasis, pancreatic health, and relevant biomarkers.

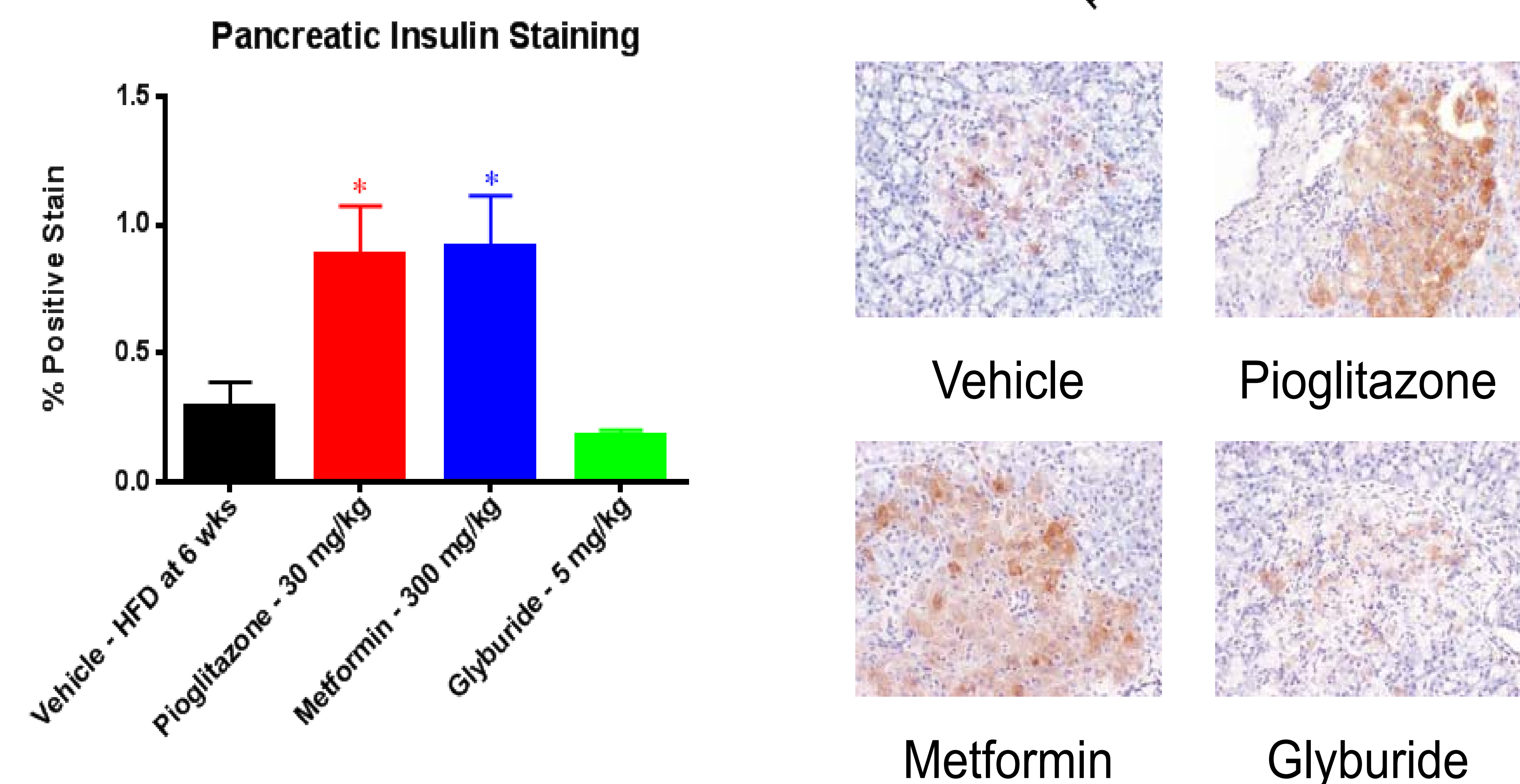
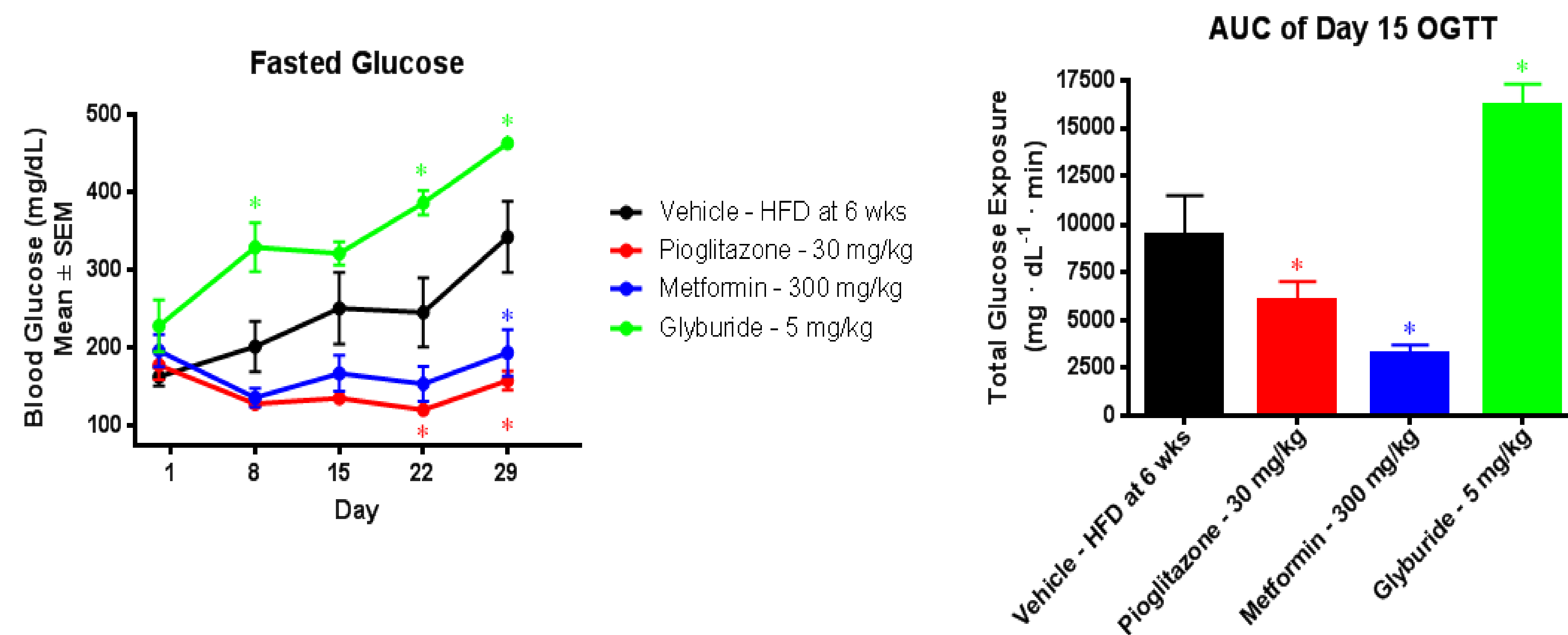
Methods

- Male ZDF rats 8 – 10wks of age
- RD12451 (45% fat) or Lab Diet 5008 fed throughout
- All treatments p.o, QD x 31
- Blood glucose estimated using hand held glucometer
- 5hr fasting blood glucose estimated
- OGTT following 5hr or 16hr fast
- Terminal fasting blood sample for estimation of biomarkers
- Pancreata fixed in 10% NBF and stained for insulin

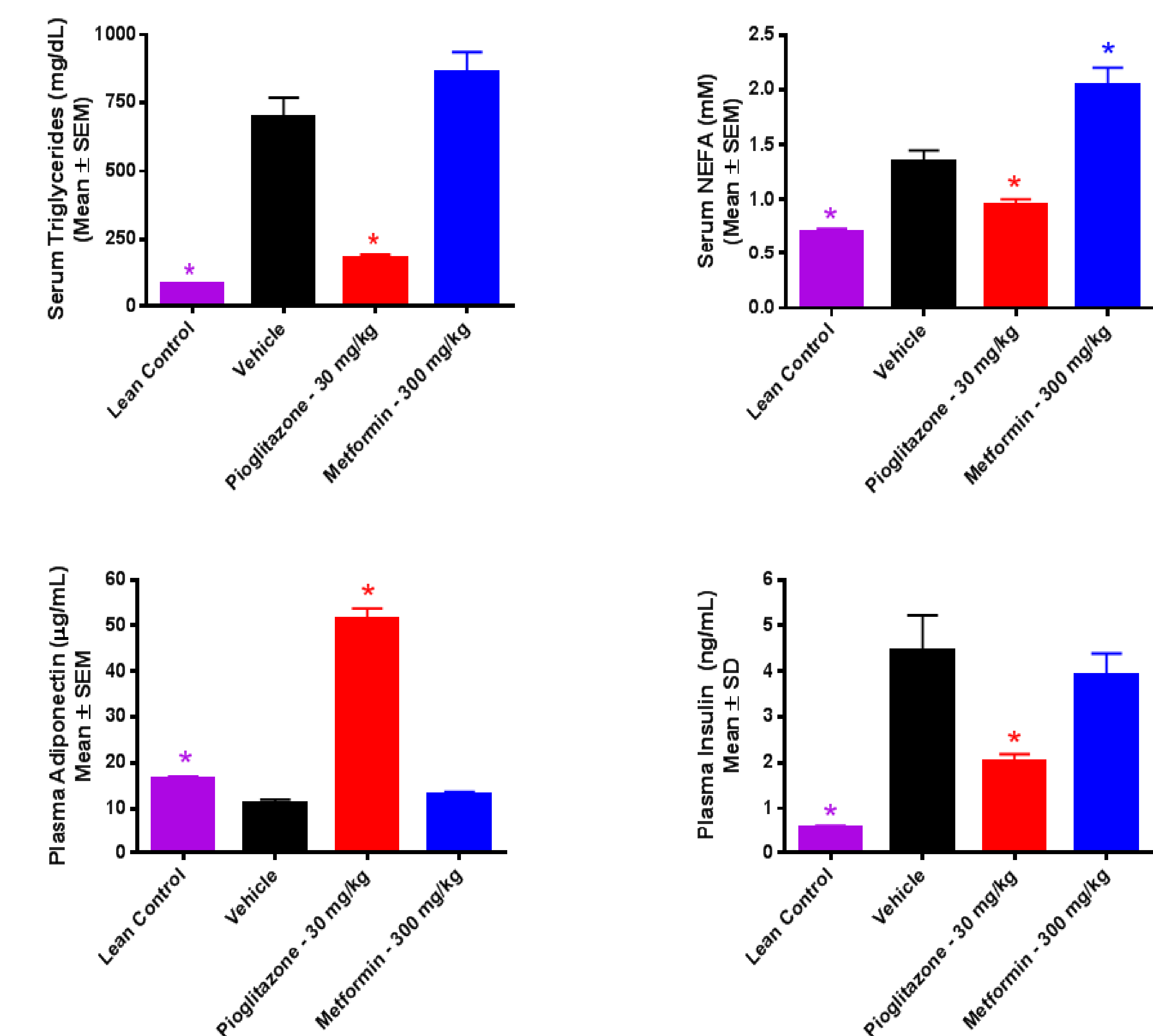
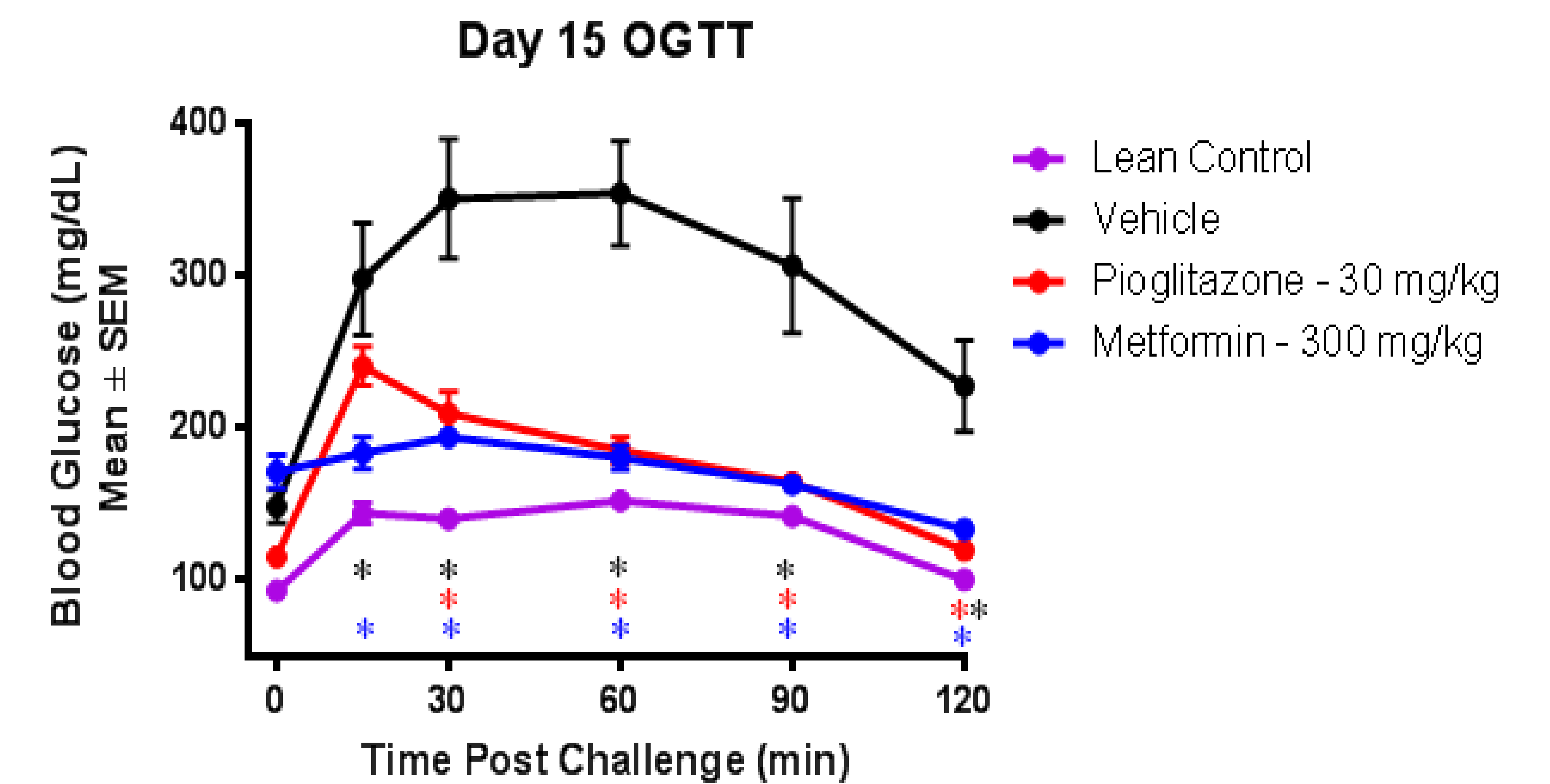
ZDF Rat is a Model of Pancreatic Exhaustion



Glyburide Treatment Hastens Pancreatic Exhaustion



ZDF Rats Respond to Standards of Care



Summary:

- Male ZDF rats develop pancreatic exhaustion like most T2D patients
- Glyburide hastens pancreatic exhaustion
- Male ZDF rats respond to standards of care