Euglycemic hyperinsulinemic clamp

Key benefits:
- Sensitivity (15%) sufficient to detect a statistically significant impact of your compound on insulin resistance
- Essential and robust data for your records: the isotopic glucose enrichment procedure is a unique solution giving access to hepatic glucose production, glycolysis and glycogen synthesis
- Specific mechanisms targeted by your compound: the insulin dose is chosen to prioritize either hepatic glucose production or peripheral glucose utilization

**DESCRIPTION AND PARAMETERS**

- **Species:** rat, mouse
- **Evaluated parameters:**
  - Whole-body glucose utilization rate (TO)
  - Hepatic glucose production (HGP)
  - Glucose infusion rate (GIR)
  - Whole-body glycolysis rate
  - Whole-body glycogen synthesis rate

**Clamp options:**
- **Two-step euglycemic hyperinsulinemic clamp:**
  Provides a global picture of hepatic and peripheral insulin resistance in a single animal; offers an integrated evaluation of mechanisms which are not animal-dependent, saving animals, time, and money
- **Hyperglycemic hyperinsulinemic clamp:**
  Provides unique whole body data on insulin-regulated hepatic glycogen synthesis: this technique places the focus on hepatic glycogen synthesis, which is strongly stimulated in hyperglycemic conditions

Two-step euglycemic hyperinsulinemic clamp + ^3^H-glucose in awake rats after 6 weeks of diet:

- **Peripheral insulin resistance**
- **Hyperglycemic hyperinsulinemic clamp + ^3^H-glucose:**
- **Hepatic glycogen biosynthesis rate**

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**ADD-ON STUDIES**

- Individual tissue glucose uptake assay for identifying specific tissues targeted by your compound, thereby identifying unexpected adverse effects and additional benefits, or for stratifying heterogeneous patient populations for clinical trials.
- FFA turnover technique to complete the overview of your drug compound's impact on whole-body INSULIN SENSITIVITY and lipid metabolism.

**REFERENCES**

Knauf C et al, J Clin Invest 115: 3554-63, 2005
Cook S et al, Diabetes 53: 2067-72, 2004
Burcelin R et al, Diabetes 50: 1282-9, 2001