

**Measurement of blood pressure pressor response and endothelial reactivity in conscious animals (rat/mouse) using radiotelemetry**

**Objectives:**

The use of implantable radiotelemetry allows blood pressure measurement of conscious, unrestrained animals. In addition, the chronic implantation of an intravenous catheter in rats allows the recording of pressor / dilator responses to various agents so as to evaluate endothelial function in vivo in conscious unrestrained animals (figure 1).

**Summarized methodology:**

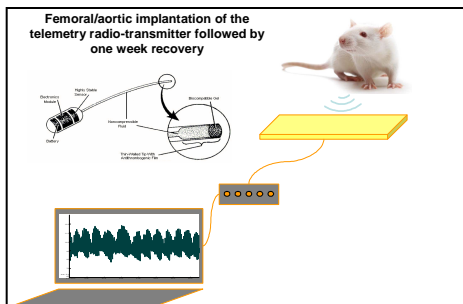


Figure 1: Principle of radiotelemetric measure of BP in conscious unrestrained animals

The radio-telemetry transmitter (model TA11PA-C40 in rats or PA-C10 in mice, Data Sciences International, MN, USA) is implanted under inhaled isoflurane (2%). In rats, the right jugular vein can be catheterized to allow subsequent intravenous perfusions. The animals are allowed to recover one week after surgery before BP monitoring. On the day of recording, conscious unrestrained rats are allowed to acclimate to their new environment (30 min) before online recording of BP for 30 minutes. Subsequently, cumulative increasing doses of any vasodilator or vasoconstrictor agent can be i.v. delivered and pressor / dilator responses determined for each dose (figures 2 and 3).

**Endpoints:**

- Mean arterial pressure (baseline and response to i.v. injection)
- Diastolic arterial pressure (baseline and response to i.v. injection)
- Systolic arterial pressure (baseline and response to i.v. injection)
- Pulse pressure (baseline and response to i.v. injection)
- Heart rate (baseline and response to i.v. injection)

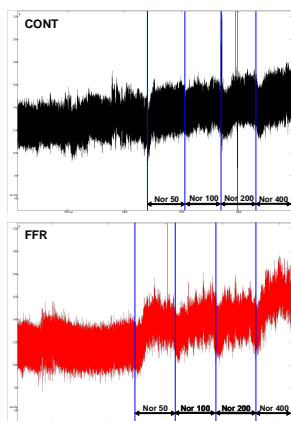


Figure 2: Example of original recordings of the pressor response to increasing doses of norepinephrine (0 to 400 ng/kg/min) in chronically instrumented control (CONT, upper panel) and fructose-fed rats (FFR, lower panel) (Pelvipharm, internal data)

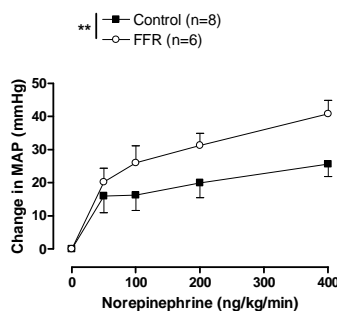


Figure 3: Concentration response curves to increasing doses of norepinephrine infusion (0 to 400 ng/kg/min) on mean arterial pressure (MAP) measured in vivo in conscious animals (control and fructose-fed rats (FFR)). (From Oudot et al. J Physiol Res 2008)

**NB:** Pelvipharm will gladly study the feasibility of evaluating blood pressure and pressor response in other experimental models to meet its client's needs.

**Related Pelvipharm bibliography:**

Oudot, A. et al. *Physiol Res* (2009) : 58(4):499-509  
 Behr-Roussel, D. et al. *Am J Hypertens* (2008) : 21(11) : 1258-1263

**Links to applicable therapeutic areas / targeted disorders:**

**- Sexual pharmacology**

\* ED (Erectile Dysfunction)

**- Cardiovascular and metabolism pharmacology**

- \* Hypertension
- \* Metabolic syndrome
- \* Atherosclerosis
- \* Diabetes Mellitus