

## Myocardial infarction in rats

### **Model advantages:**

Myocardial ischemia – reperfusion in rats provides a useful method to study myocardial protection using pharmacological agents.

This experimental model mimics the acute myocardial infarction episode in humans followed by the reperfusion treatment (usually thrombolysis or angioplasty). When ischemic period is prolonged, it mimics cardiac complications following an untreated coronary occlusion (left ventricle remodeling, heart failure).

### **Pathophysiological features:**

- **Ischemia:** interruption of oxygen supply in the non-perfused area of the myocardium, leading to ventricular contractile dysfunction. Ischemic period can be prolonged to induce left ventricle remodeling evolving later in heart failure (figure 1).
- **Reperfusion:** early arrhythmias, left ventricle contracture followed by progressive recovery of myocardial contractile function

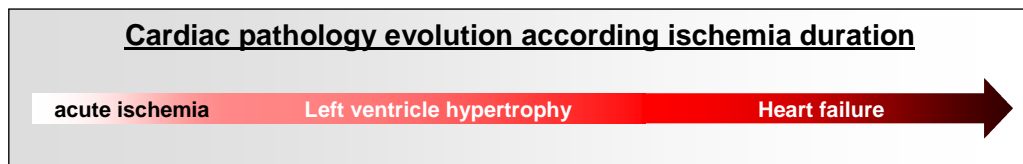


Figure 1: Evolution of cardiac pathology according the length of ischemic period

The duration of ischemia and reperfusion will be adapted according to the client's needs.

### **Summarized methodology:**

- Myocardial ischemia is induced by the occlusion of the left anterior descending (LAD) coronary and reperfusion is performed by releasing the coronary ligation.

### **Related Pelvipharm bibliography:**

Non disclosable information for confidentiality reasons

### **Links to applicable experimental skills:**

**- Administration routes / regimen**

**- Plasma / urine / tissue collection**

**- In vivo experiments – conscious animals**

\* Urine collection - Metabolic cages

\* Tail cuff

**- In vivo experiments – anesthetized animals**

\* Ischemia – reperfusion injury

**- Biochemistry (Plasma / Urine / Tissue)**

\* Spectrophotometric assays

\* Protein expression and activity

**- Histology**

\* Histomorphology

\* Histomorphometry

\* Oxydative fuorescence

**- Immunohistology / Confocal microscopy**

\* Protein expression – immunohistochemistry / immunofluorescence

\* Confocal microscopy