

Safety/Efficacy

Isolated heart – Langendorff method

The isolated perfused mammalian heart preparation by means of Langendorff method¹ is an one of the most common experimental models in cardiovascular research. This biological assay is suitable for investigating the effect of inotropic, chronotropic, antiarrhythmic or vasoactive substances in the heart of normal or pretreated animals as well as for biochemical studies of myocardial metabolism and cardiotoxicity studies.

Species: *Rattus norvegicus* (Sprague Dawley or Wistar Hannover)

Number of animals/group: 5-6 animals

Route of administration: upon request

Treatment mode: upon request

Main read-outs: mechanical parameters of the working myocardium (contractile force, ventricular pressure, volume), mean coronary flow, bioelectrical parameters (ECG, monophasic action potential), and cardiac rhythm.

Validation Data

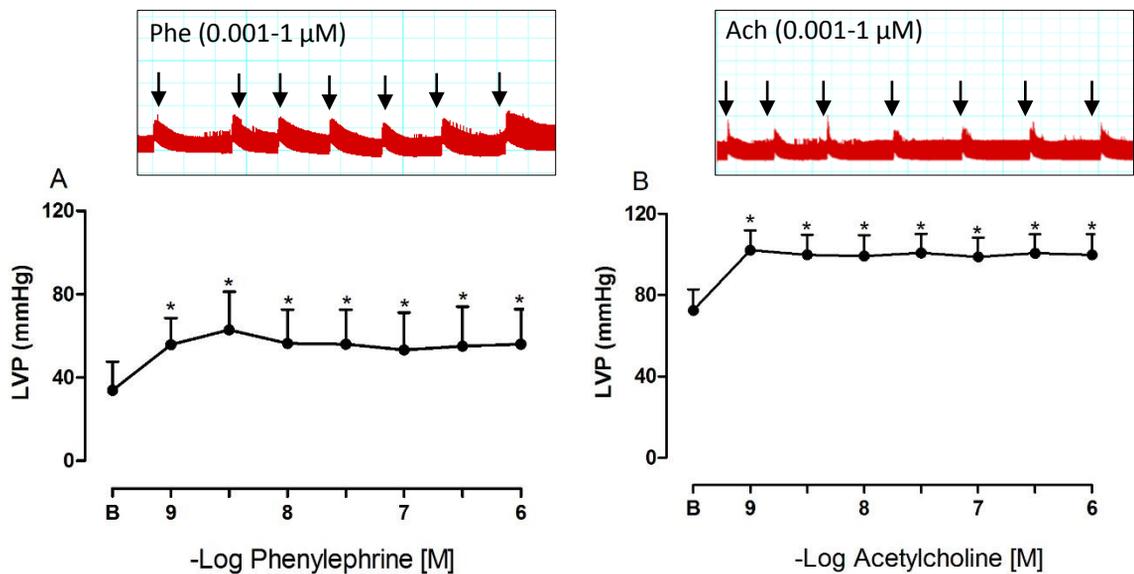


Figure: Effects of Phenylephrine (Phe; A) and Acetylcholine (Ach; B) (0.001-1 μ M) on the cardiac function of Langendorff isolated heart system. The Figure shows a increase of left ventricular pressure (LVP) after drug exposition. Each point represents the mean \pm SEM of 4 hearts per group. Statistical analyses used was paired T Test. *P < 0.05, versus basal (B).

To avoid bias and to allow reproducibility all in vivo experiments follow the ARRIVE guidances². Rat colony from Charles River Laboratories is breed and maintained in SPF conditions. The project includes study plan and final report. Raw data are inspected by quality assurance unity. The experimental procedures was previously approved by the CIEnP Committee on the Ethical Use of Animals.

References:

- ¹Skrzypiec-Spring M, Grotthus B, Szelag A, Schulz R. Isolated heart perfusion according to Langendorff-Still viable in the new millennium. *J Pharmacol Toxicol Met*, 55: 113-126, 2007.
- ²Kilkenny C, Browne WJ, Cuthill IC, Emerson M, Altman DG. Animal research: reporting in vivo experiments: The ARRIVE guidelines. *PLoS Biol.* 8 (6): e1000412, 2010.

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