Danish Myo Technology A/S

APPLICATION NOTE AN-900L-04

Heparin Doses Used in Langendorff Experiments

Langendorff System – Model 900L | Danish Myo Technology A/S

Document information	
Document number	AN-900L-04
Applies to	Langendorff System 900L, adult mouse and rat hearts
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Related documents	AN-900L-01 (Isolated Heart Preparation and Mounting); AN-900L-02 (Perfusion Buffers and Reagents)

1 Purpose and Scope

Heparin is given before heart excision to prevent clots in the coronary circulation. This note summarizes published examples of unfractionated heparin doses given before excision. There is no single standard dose. The examples are not DMT recommendations. IU stands for international units.

> **NOTE** The doses are examples from published protocols and are not independently validated by DMT. Select the dose with the veterinarian responsible for laboratory animal care, according to your approved animal study protocol.

2 Published Doses

Table 1 – Published heparin doses before heart excision

Animal and route	Published dose	Dose at example body weight	Waiting period and reference
Mouse, i.p.	100–200 IU per mouse	25 g mouse: 100–200 IU (4,000–8,000 IU/kg)	100 IU per mouse has been used in whole-heart experiments [1]. At 200 IU per mouse, a cell isolation protocol specifies about 10 min before anesthesia [2].
Mouse, i.v.	500 IU/kg (one protocol example)	25 g mouse: 12.5 IU	Tail vein injection before heart excision. The methods section does not specify an exact waiting period [3].
Rat, i.p.	500 or 1,000 IU/kg (two protocol examples)	300 g rat: 150 or 300 IU	500 IU/kg is given with the anesthetic mixture [4]. At 1,000 IU/kg, a waiting period of 20–30 min is specified [5].
Rat, i.v.	500 or 1,000 IU/kg (two protocol examples)	300 g rat: 150 or 300 IU	500 IU/kg via the tail vein [3]. At 1,000 IU/kg via the jugular vein, 30 seconds of circulation is specified before further surgery [6].

3 Units and Use

- A dose per animal is not a dose per kilogram. 200 IU per mouse is not the same as 200 IU/kg.
- The i.p. and i.v. doses come from different protocols. They do not give a conversion factor between routes.
- The injection volume depends on the concentration of the product you use.
- Select the dose, route and waiting period together, with the veterinarian responsible for laboratory animal care and according to the approved animal study protocol.

4 References

[1] Role of PI3K in myocardial ischaemic preconditioning (2017).

[2] Isolation of Adult Mouse Cardiomyocytes Using Langendorff Perfusion Apparatus.

[3] P2 purinergic receptor activation enhances cardiac contractility in isolated rat and mouse hearts (2001).

[4] Optical Mapping of Langendorff perfused Rat Hearts (2009).

[5] Bidirectional Electrical and Optoelectronic Interfaces in Healthy and Ischemic Ex Vivo Rat Hearts.

[6] Induction and Assessment of Ischemia reperfusion Injury in Langendorff perfused Rat Hearts (2015).