

Supplemental Materials and Methods

Hibernaculum

The hibernaculum is a self-built apparatus (252 ft³, with O₂/CO₂ control) which allows the woodchucks to be kept at a constant temperature of 42°F and facilitates the entry into torpor. The animals remained in the hibernaculum without food for up to 10 continuous days. The animals were monitored via the surgically implanted telemetry system. After the woodchucks reached a sufficient degree of hibernation (heart rate <25 bpm for minimum 2 days), the animals were sacrificed as the DT group.

Surgical Instrumentation and Physiological Studies

Woodchucks, 1-2 years old, were sedated with ketamine (37.5 mg/kg, i.m.) and xylazine (2.5 mg/kg, i.m.). General anesthesia was mask induced and maintained with isoflurane (0.5–1.5 vol%) following tracheal intubation. Each woodchuck was treated with analgesics and antibiotics prior to and following surgery. Using sterile surgical technique, a left thoracotomy was performed at the 5th intercostal space. A solid-state miniature pressure gauge was implanted in the LV cavity to obtain LV pressure and its first derivative, LV dP/dt , as previously described (1-4). The pressure-gauge wire was externalized via separate small incisions between the scapulae, the thoracotomy incision was closed in layers, and the chest was evacuated of blood and air. Maintaining aseptic technique, the pressure-gauge wire was coiled subcutaneously, each with a non-absorbable suture tag that exited an incision and was incorporated into the skin suture. The suture tags facilitate rapid access to the pressure-gauge wire following suture removal. Additionally, a telemetry system (Data Sciences) was implanted to remotely monitor aortic pressure, temperature, and ECG while the animals were in the hibernaculum. The animals

recovered from the surgery for 2 weeks before they were put into the hibernaculum. For DT animals, the ketamine (37.5 mg/kg) and xylazine (2.5 mg/kg, i.m.) were administered for tranquilization before initiation of the experimental protocol. Aseptic technique was used to externalize the pressure gauge, and then global baseline hemodynamic data were recorded as previously described (1-4).

References

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