Continuous intravenous (IV) infusion in mice presents many challenges. The model requires intricate surgery and catheter size is limited due to vessel size. In addition, traditional tether security devices such as pellets, harnesses or tail-cuffs need to be continually checked and adjusted for proper fit. Improper fit of pellets or harnesses can lead to infection, skin lesions, and weaning of the animal. Tail-cuffs can cause weaning and lesions where they are secured with steel suture. If the devices are too tight, the mouse can escape and the catheter may get undocked. The use of an externalized magnetic port and tether system proved successful in this study. Findings

All animals were patent for 27 or 28 days of dosing; 90% and 57% of the saline / HBC groups (respectively) were patent for blood collection. Twenty-five CD1 male mice implanted with jugular catheters attached to an externalized port were purchased. Male mice were used since gender differences were not expected. The ports of 20 mice (10 per group) were connected to a magnetic tether/swivel assembly mounted to a counterbalance arm on the cage lid. The cages were placed on custom shelving to allow access to the automatic watering system of specially designed rat infusion banks (see Figure 2). Group 1 animals were dosed with 0.9% saline and group 2 was dosed with 20% hydroxypropyl-beta-cyclodextrin (HBC). Twenty-five male CD1 mice were implanted by the port manufacturer. Animals were observed daily, and body weights, food weights and detailed physicals were collected weekly. Blood was collected for hematology and serum chemistry at the time of scheduled necropsy. A complete set of tissues were collected for each animal at necropsy. Histopathology was conducted on the heart, kidney, lung, infusion site and gross lesions.

To evaluate the feasibility of conducting a 28-day continuous IV infusion study in mice equipped with jugular vein catheters and externalized magnetic ports, a method development study was designed. Two commonly used vehicles for infusion studies were tested - 0.9% Sterile Saline for Injection (saline) and hydroxypropyl-beta-cyclodextrin (HBC). Animals were observed daily, and body weights, food weights and detailed physicals were collected weekly. Blood was collected for hematology and serum chemistry at the time of scheduled necropsy. A complete set of tissues were collected for each animal at necropsy. Histopathology was conducted on the heart, kidney, lung, infusion site and gross lesions.

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