

SOP name: Fluid therapy**Equipment:****Materials:** Ringer-lactate, if necessary additionally glucose

- Use Ringer-Lactate for fluid therapy. Compared to saline, this solution contains additionally calcium, potassium and lactate, which reflects better the needs of a dehydrated organism.
- In case the mice show, besides dehydration, also reduced food intake or have diarrhea, you should add glucose to the Ringer-Lactate: Replace half of the stated injection volume by 5% glucose solution (you can mix the two fluids and inject it at once → less stress for the mouse and you). CAVE: Consider possible side effects if you have e.g. diabetic mice!
- Aliquots of Ringer-Lactate and 5% glucose solution: since these fluids are available in large amounts only, consider making sterile aliquots (under laminar flow into sterile tubes). Once re-opened the tubes should be used up/disposed within 24 hours.

Procedure

1. Warm the fluids to body temperature before injecting by either placing the fluid container under a heating lamp/on a heating pad or if available into a water bath. This is highly important since injections of cold fluid in such volumes would need high amounts of energy in these already weak mice to keep/re-establish normal body temperature!
2. Depending on the severity of dehydration inject the following volumes:
 - 2.1 Mild dehydration: challenging to determine in mice, therefore as soon as dehydration is detectable (=moderate dehydration), fluid therapy is clearly indicated.
 - 2.2 Moderate dehydration: can be assumed if, for example:
 - Skin fold is stretching back slowly
 - Loose stools (diarrhea) observable
 - Body weight loss (<5%) accompanied with other symptoms of dehydration
 - 2.2.1 100-300 uL s.c.
 - 2.2.2 check again after 4-6 h
 - 2.2.3 100-300 uL s.c. if mouse is still dehydrated
 - 2.2.4 Check mouse again the next day
 - 2.3 Strong dehydration: can be assumed if, for example:
 - Skin fold is not stretching back
 - Watery diarrhea for more than 1 day
 - Body weight loss (>5%) that can't be explained by other causes
 - 2.3.1 200-300 uL **i.p**
 - 2.3.2 check again in 4-6 h
 - 2.3.3 200-300 uL s.c. (or half of it i.p.) if mouse is still dehydrated
 - 2.3.4 Check mouse after 1-3h, if mouse is still dehydrated (skin tent test), euthanize

3. To avoid fluid overload, do not treat a mouse (**20g**) with more than 300 uL (15ul/g) per injection or a total of 600 uL (30uL/g) per day!
4. Please note that the endpoint defined by your experimental license is binding at all times. You have to sacrifice the mouse according to the criteria in your license.

References:

Paul Flecknell, "Laboratory Animal Anaesthesia", 4th edition, 2016, Academic Press, Elsevier
F. Claire Hankenson, "Critical Care Management for Laboratory Mice and Rats", 2014, CRC Press