 University of Zurich <small>UZH</small> Institute of Laboratory Animal Sciences	Standard Operating Procedure SOP	Page 1 of 3
Date: 21.08.2019	Injection Anesthesia	LTK-TRT-18-D-EN Version: D

This SOP replaces:	Date: 13.7.16 Version: LTK-TRT-18-C-EN
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Reason for Change:	None
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Related SOPs:	SOP-LTK-TRT-17-EN Post-surgery analgesia
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Indication of Use:	Prolonged invasive procedures that require the animal to be unconscious
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Aim of SOP:	This procedure describes how to perform anesthesia by injection anaesthetics
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Distribution:	<ol style="list-style-type: none"> 1. Server 2. Animal facility 3. Group vom Berg
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Attachments:

Generated at: 11.06.19	Checked and approved at: 12.06.19
by: Johannes vom Berg	by: Michal Beffinger

Responsible Persons: 1) The researcher mentioned on the respective scoring sheet 2) Any person with Module 1 and registered on animal permit

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Methods: Opiate-based 3-component anesthesia, reversible

Reagents:

eye ointment

3-Component-Anesthesia (FDD):
 1.0 mL Fentanyl 0.05 mg/mL; (= 0.05 mg/kg BW)
 1.0 mL Midazolamum (Dormicum®) 5 mg/mL; (= 5.00 mg/kg BW)
 0.5 mL Medetomidin (Domitor); 1 mg/mL (= 0.50 mg/kg BW)
 + 7.5 mL aqua,

à 0.1 mL/10 g BW, intraperitoneal


Antidote Mix :
 5.0 mL Flumazenil (Anexate) 0.1 mg/mL; (=0.5 mg/kg BW)
 0.33 mL Buprenorphinum (Temgesic®) 0.3 mg/mL; (= 0.1 mg/kg BW)
 0.25 mL Atipamezol (Antisedan) 5 mg/mL; (= 2.5 mg/kg BW)
 + 4.42 mL aqua

à 0.1 mL/10 g BW, subcutaneous

All reagents can be ordered at Vetsuisse Pharmacy

Safety:

1. Some of the compounds fall under the controlled substances legislation and are therefore stored with restricted access. Persons working with this protocol have to report to Johannes vom Berg to obtain the substances, and to get instructions on use and reporting.
2. General rules for working with sharp tools (scalpels, syringes, scissors) have to be followed.
3. Follow the rules for the animal house

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Method Description:

1. Application of 3-component-injection anesthesia with 0.1 mL/10g body weight (BW) as intraperitoneal injection (see composition). Take an insulin syringe or a 1 mL syringe with a 30G needle (yellow).
2. Ensure heat addition (via infrared lamp or heat panel) and cover the eyes with eye ointment
3. Check anesthesia after 10 min by pinch reflex. If animal does not react to it, start
4. Surgical or other intervention
5. Application of antidote and analgesia: Apply analgesia with 0,033 mL/10g BW as subcutaneous injection (s.c., **SOP-LTK-TRT-17-B-EN Post-surgery analgesia**) and antidote (s.c., 0.1 mL/10g BW)
6. Monitor animal until antidote I is taking effect and startle reflexes are recovered.
7. Monitor animals during recovery phase and ensure heat addition (via infrared lamp or heat panel)
8. Check 1-2 hours and the next day for post-operative complications

Controls:

Control pinch reflex (skin between toes of the hind limb) before start of surgery

Documentation:

Lab book, Score sheet SOP scoring post-application

Problem management:

Case 1: The animal has severe hypothermia
 ensure heating pad is switched on

Case 2 : Animal wakes up, has reflexes
 inject additional anesthesia s.c., not more than a third of the initial dose

Case 3 : Induction OK, then later the animal dies

- overdose?
- heat supply?

Report any other adverse event to your supervisor or vet

Literature:

[Lab Anim.](#) 2016 Aug;50(4):264-74. Injection anaesthesia with fentanyl-midazolam-medetomidine in adult female mice: importance of antagonization and perioperative care. Fleischmann et al