

FISH, AQUATIC AMPHIBIAN, AND REPTILE ANALGESIA

1. PURPOSE

The intent of this Standard Operating Procedure (SOP) is to describe methods of assessing pain in fish, aquatic amphibians and reptiles, and mitigating pain by administration of analgesic medications.

2. RESPONSIBILITY

Principal investigator (PI) and their research staff, veterinary care staff.

3. GENERAL CONSIDERATIONS

- 3.1. A procedure which would be expected to be painful if it were done on humans must be considered painful to the animal.
- 3.2. When there is a question of whether or not a procedure is painful, the animal should receive the benefit of analgesia.
- 3.3. Analgesia should be provided at an appropriate dose and frequency to control pain.
- 3.4. Any deviation from this procedure must be justified by the investigator and approved by the appropriate Facility Animal Care Committee (FACC).

4. PAIN RECOGNITION AND ASSESSMENT

- 4.1. Adapt the frequency of observation to the invasiveness of the procedure (minimum once a day).
- 4.2. Start by observing the animal from a distance so the animal's behavior is not altered by the presence of the observer. Then proceed to observe the animal more closely.
- 4.3. Look for any changes in the behavior. Report animals which appear to be in pain to the veterinary care staff.
Note: The most reliable signs of pain and distress are the changes in behavior. This implies a good knowledge of species and individual normal behavior by the observer.
- 4.4. Fish, amphibians, and reptiles do not exhibit obvious clinical signs of pain. Because fish and amphibians can experience pain as mammals do, the assumption is made by extrapolation from human observation.

5. ANALGESIA PLAN

- 5.1. If possible, provide analgesia before the painful stimulus, as it is more effective in preventing pain (e.g. give analgesic before surgery).

| Analgesic | Dose | Route | Duration | Note |
|--|-----------|--|-------------------|---|
| Lidocaine | < 2 mg/kg | SC, Infiltration of surgical wounds | 30–60 min. | Use lidocaine HCl 2% (20mg/ml) injectable solution. Because this drug is acidic, it is recommended to dilute it 3:1 with sodium bicarbonate injectable solution (at 5 or 8.4%) Dilution must be prepared immediately before use and should not be stored. Diluted solution is as effective but induction of analgesia is slightly prolonged. *Dilution with sodium bicarbonate is not necessary if lidocaine is to be administered to an anesthetized animal. |
| Bupivacaine | < 2 mg/kg | SC, Infiltration of surgical wounds | 3–4 hr. | Use bupivacaine HCl 0.50% (5mg/ml) injectable solution. Same comment as for lidocaine. |
| * Lidocaine bupivacaine mixture | < 2 mg/kg | SC, Infiltration of surgical wounds | 30 min. to 4 hrs. | Same comment as for lidocaine. Combining both drugs allows for rapid induction and prolonged effect. Use a 1:1 mixture of lidocaine HCl 2% (20mg/ml) injectable solution and bupivacaine HCl 0.50% (5mg/ml) injectable solution. Discard mixture after 3 months. |
| Lidocaine or benzocaine - (Orajel) gel | - | Topical | 30–60 min. | For fish and amphibians only. Apply a thin layer over the affected area |

* most commonly used

7. GENERAL ANALGESIA

Fish

| Analgesic | Dose | Route |
|-----------|------|-------|
|-----------|------|-------|

7.1. Administration of non-steroidal anti-inflammatory drugs (NSAIDs):

7.1.1. NSAIDs include carprofen, ketoprofen and meloxicam.

7.1.2. To minimize chances for adverse drug interactions, a washout period of 5-7 days is recommended before switching between NSAIDs.

8. SAFETY PRACTICES

8.1. MS-222:

8.1.1. Wear protective clothing, gloves, and eye protection when handling the MS-222 powder.

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SOP REVISION HISTORY

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