

Title: Ruminant Sedation and Analgesia

Species: Ruminants

Last Updated: 3/2/2006

Purpose

Sedation eases handling procedures and reduces animal stress when performing non-painful or minimally painful or distressful procedures. Analgesics are used to provide pain reduction and/or complete relief. Analgesics must always be used for a minimum of 24 hours post-operatively, but continued for as long as medically indicated. The attending veterinarian must approve the selection of all sedative and analgesics used, their dosages, and the criteria for termination of their use.

Potential Impact on Animals

Sedatives and analgesics improve animal welfare and potentially increase safety for personnel when working with fractious animals. For best effects and lower dosages, analgesics should be administered prior to the onset of a painful experience such as surgery. Variations in response to dosage can occur, requiring professional judgment in their application. Sedatives decrease the amount of anesthetic required when used prior to the administration of many anesthetics.

Procedure Description

The following drugs, dosages and routes of administration have been successfully utilized. Generally, the lower end of the dosage range should be used first, and if needed supplement with additional amounts to maintain the level of sedation required, particularly with intravenous dosing.

SEDATION AND ANALGESIA

BOVINE

Flunixin Meglumine (Banamine®)

Use – potent analgesic

Mechanism of Action – NSAID; cyclo-oxygenase inhibitor

Dosage – 0.5-1.0 mg/lb body weight once daily or divided into two doses administered 12 hours apart

Duration of Effect – 24 hours

Reversal Agent – None

Withdrawal – milk 36 hours; meat 4 days; a withdrawal period for pre-ruminating calves is not established

Contraindications – renal disease; gastric hyperacidity; studies dependant upon cyclo-oxygenase activity (prostaglandin cascade)

Xylazine (Rompun®)

Use – excellent sedation and moderate to good analgesia

Contraindications – carbohydrate metabolism studies; xylazine induces hyperglycemia secondary to inhibition of insulin secretion through α -2 adrenergic receptors in pancreatic β -cells

Mechanism of Action - α -2 agonist

Dosage - 0.015 – 0.05 mg/lb intravenously; 0.05-0.1 mg/lb intramuscularly

Duration of Effect – 1.5-3.0 hours; higher end will cause recumbancy

Reversal Agent – α -2 antagonists

Withdrawal – no established withdrawal times; use in food animals requires a valid extralabel prescription by a licensed veterinarian or a valid INAD

Xylazine/Acepromazine

Use – same as xylazine alone

Contraindications – same as xylazine alone

Mechanism of Action – xylazine is an α -2 agonist; the exact MOA of acepromazine is unknown, however phenothiazines in general block post-synaptic dopamine receptors in the CNS and may affect dopamine secretion and metabolism

Dosage: 0.015 mg/lb xylazine; 0.001 mg/lb acepromazine

Duration of Effect – 1.5-3.0 hours; higher end will cause recumbancy

Reversal Agent – α -2 antagonists

Withdrawal – no established withdrawal times; use in food animals requires a valid extralabel prescription by a licensed veterinarian or a valid INAD

References

1. Veterinary Anesthesia. William V. Lumb and E. Wynn Jones. Lea & Febiger. 1984.
2. Large Animal Anesthesia Principles and Techniques. TW Riebold, DO Goble and DR Geiser. The Iowa State University Press.