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| --- | --- | --- | --- |
| Drug | Ketamine | Butorphanol | Xylazine |
| Uses/Indications | * Used for field sedation and analgesia.
 | * Used to enhance analgesia and sedation
 | * Is used combination with other agents such as ketamine for inducing anaesthesia or perioperative sedation and analgesia.
 |
| Adverse Effects | * Hypertension
* Hypersalivation
* Respiratory depression
* Hyperthermia
* Emesis
* Vocalization
* Erratic and prolonged recovery
* Dyspnea
* Spastic jerking movements
* Seizures
* Muscular tremors
* Hypertonicity
* Opishotonos
* Cardiac arrest
* Pain with IM injections
 | * Salivation
* Seizures
* Hyperthermia
* Decreased GI motility
 | * Salivation
* Ruminal atony
* Bloating,
* Regurgitation
* Hypothermia
* Diarrhoea
* Bradycardia
* Premature parturition
* And ataxia
 |
| Contraindications/precautions/warnings/ Drug Interactions | * Prior hypersensitivity reactions,
* Increased CSF pressure
* Head trauma
* Significant blood loss
* Malignant hyperthermia
* Increased intra-ocular pressure or open globe injuries.
 | * Hypersensitivity reactions
 | * Should not be used in animals receiving epinephrine or having active ventricular arrhythmias.
* It should be used with extreme caution in animals with pre-existing cardiac dysfunction, hypotension or shock, respiratory dysfunction, severe hepatic or renal insufficiency, pre-existing seizure disorders.
* Should not be used in the last trimester of pregnancy, particularly in cattle.
* Should not be given to ruminants that are debilitated, dehydrated, or with urinary tract obstruction.
 |
| Dosage | * 0.05-0.1mg/kg IM, SC
 | * 0.01mg/kg

IM, SC | * 0.02mg/kg

IM, SC |
| Concentration | * 20mg/ml
 | 5mg/ml | 10mg/ml |
| Withdrawal Period | * Meat : 3 days
* Milk: 3 days
 | Meat: 4 daysMilk: 72hrs | * Meat: 7 days
* Milk: 72hrs
 |

**Drug Dosage calculation for Each Animal:**

Dose x Weight/ Concentration of Drug

KETAMINE STUN IM, SC Standing

**Scenario 1: 2 Week Old Saanen 5kg**

Ketamine: 0.05mg/kg X 5kg/ 20mg/ml= 0.0125ml

Xylazine: 0.02mg/kg X 5kg / 10mg/ml= 0.01ml

Butorphanol: 0.01mg/kg X 5kg / 5mg/ml = 0.01ml

**Scenario 2: 6 month old Calf 60kg**

Ketamine: 0.05mg/kg X 60kg/ 20mg/ml= 0.15ml

Xylazine: 0.02mg/kg X 60 kg/ 10mg/ml= 0.12ml

Butorphanol: 0.01mg/kg X 60kg / 5mg/ml = 0.12ml

**Scenario 3: 2 Year old breeding ram 72kg**

Ketamine: 0.05mg/kg X 72kg/ 20mg/ml= 0.18ml

Xylazine: 0.02mg/kg X 72kg/ 10mg/ml= 0.144ml

Butorphanol: 0.01mg/kg X 72kg / 5mg/ml = 0.144ml

References:

[file:///C:/Users/Raina%20Nowbutt/Downloads/Field-Sedation-and-Anesthesia-of-Ruminants.pdf](file:///C%3A/Users/Raina%20Nowbutt/Downloads/Field-Sedation-and-Anesthesia-of-Ruminants.pdf)