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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 days  Milk: 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>