**INTRODUCTION**

In the fields of wildlife research, conservation and management, physical contact with the animal is sometimes essential to successfully carry out certain procedures. People have developed different forms of physical restraint and have proven that many of these methods cause a high level of stress to the animal. Chemical immobilization is the safest method for the personnel involved in the procedure which minimizes the stress and risks associated with it.

**UNGulates ANesthetica**

Pre-anesthetic Considerations

There are many factors that can influence the method of anesthesia and the ways of administering the drugs. Capture events must be carefully planned to avoid prolonged chase times in an effort to prevent capture myopathy, trauma or hyperthermia.

Chemical Restraint

Most nondomestic species are uncooperative or too dangerous to use traditional routes of drug administration therefore it is appropriate to use chemical restraint.

When injectable anesthetic agents are used in unrestrained nondomestic species, a remote delivery system consisting of a dart and projector is often the most practical option. Darts can be projected via a blowpipe, compressed air projector, or gunpowder cartridge rifle.

Monitoring

Pulse oximetry or arterial blood gas analysis should be used to monitor oxygenation.

Rectal temperature should be monitored every 5–10 minutes. Deer and sheep are prone to hyperthermia.

Heart rate should be monitored, at minimum, every 5 minutes.

**Anesthetic Drugs Classification**

<table>
<thead>
<tr>
<th>Anesthetic Drugs</th>
<th>Examples</th>
<th>Antagonists</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neuromuscular blockers</td>
<td>Succinylcholine</td>
<td>Neostigmine</td>
</tr>
<tr>
<td>Sedative Drugs</td>
<td>α2 Adrenergic Agonists: Xylazine, Medetomidine, Detomidine</td>
<td>Atipemazole, Yohimbine</td>
</tr>
<tr>
<td>Dissociative Anesthetics</td>
<td>Ketamine, Tiletamine/Zolazepam</td>
<td>-</td>
</tr>
<tr>
<td>Opioids</td>
<td>Ethorfin, Carfentanil, Fentanyl, Butorphanol</td>
<td>Naloxone, Naltrexone</td>
</tr>
</tbody>
</table>

**OBJECTIVES**

1. Understand the reasons for performing anesthesia in ungulates.
2. Explain the basis of anesthesia in ungulates.
3. Make a bibliographic review on the most used anesthetic protocols in Red Deer, Fallow Deer and Barbary Sheep.
4. Compare the anesthetic protocols in each species and determine the most recommendable ones.

**ANESTHETIC PROTOCOLS**

**Red Deer**

Chordata, Mammalia, Artiodactyla, Cervidae, Cervus

- Butorphanol: 0,11 mg/kg
- Azaperone: 0,07 mg/kg
- Medetomidine: 0,05 mg/kg
- Carfentanil: 10 µg/kg
- Xylazine: 0,1 mg/kg

Kreeger 1996

**Fallow Deer**

Chordata, Mammalia, Artiodactyla, Cervidae, Dama

- Xylazine: 0,4 mg/kg
- Tiletamine/Zolazepam: 3 mg/kg

Kreeger 1996

- Ketamine: 2 mg/kg
- Xylazine: 0,8 mg/kg

Santiago y Lopez 2010

- Tiletamine/Zolazepam: 5 mg/kg
  - Miller and Fowler 2012

- Medetomidine: 0,05 mg/kg
  - Miller and Fowler 2012

- Carfentanil: 10 µg/kg

Kreeger 1996

**Barbary Sheep**

Chordata, Mammalia, Artiodactyla, Bovidae, Caprinae, Ammotragus

- Tiletamine/Zolazepam: 6 – 8,6 mg/kg
  - Santiago y Lopez 2010; Kreeger 1996

- Ketamine: 1,5 mg/kg
- Medetomidine: 1,2 mg/kg

Kreeger 1996

**CONCLUSION**

**Recommended protocol**

- Ketamine: 2,5 mg/kg
- Medetomidine: 0,1 mg/kg

Kreeger 1996

REFERENCES:
