

Chemical immobilization of an injured Himalayan Ibex with Ketamine-Xylazine mixture

The Himalayan Ibex *Capra sibirica* is a true goat species of high conservation priority with a geographical distribution range in India, Pakistan, China, Afghanistan, Uzbekistan, Kazakhstan, Mongolia, Russia, Tajikistan, and Kyrgyzstan (Khan et al. 2016; Zahid et al. 2018). In India, it is found in the Karakoram Range, the Himalayan range and the Trans-Himalayan region of Ladakh and Himachal Pradesh (Raza et al. 2015; Zahid et al. 2018; Reading et al. 2020). They prefer high altitude mountainous regions habitat from 5,000 to 6,700m above mean sea level with rocky terrain and open alpine meadows and cliffs and during winter season they descend to lower elevations (Raza et al. 2015). Himalayan Ibex is protected and included in the Schedule I of India's Wildlife (Protection) Act, 1972. Poaching and competition with domestic livestock are some of the major threats faced by the Himalayan Ibex



Animal just after administration of reversal drug. © Department of Wildlife Protection, Leh.

in India (Usman et al. 2007). This note reports the successful chemical immobilization of an adult male Himalayan Ibex *Capra sibirica* whose age was estimated to be 12 years based on dentition and rings over the horns with an estimated weight of 100kg based on visual estimation for assessment and of an observed physical injury with lameness of left hind leg. The Himalayan Ibex was rescued physically by the villagers of Liktese, in the Rong area of Changthang range in Leh District of the Union Territory of Ladakh and handed over

to Department of Wildlife Protection, Leh, Ladakh.

Within 12 hours of entry to the Rescue and Rehabilitation Centre in Leh, the animal was chemically immobilized using a combination of Ketamine (100mg/ml; Vetalar, 10ml, Parke Davis & Co.) and Xylazine (100mg/ml; XylaMed, 50ml, Bimeda) at individual dosages of 1.5mg/kg body weight. The drug was remotely delivered employing a 3ml dart with plain needle (N1530 needle, 17G x 1.25" (1.5mm x 30mm)) over the right quadriceps muscle. Drug induction time was



Animal able to stand after administration of reversal drug. © Department of Wildlife Protection, Leh.

calculated from the time of darting to sternal recumbency. Physiological parameters such as respiration rate based on visual movement of the belly, body temperature based on rectal temperature and heart rate by chest auscultation were assessed based on per minute just after complete induction on approaching the animal.

Yohimbine (20mg/ml; Yohimbe, 20ml, Equimed USA) at dose rates of 0.125mg/kg body weight was used for drug reversal following completion of necessary procedures. The induction took place after four minutes of administering the Ketamine-Xylazine mixture with normal respiration rate (12/minute), heart rate (82/

minute), body temperature (39° Celsius) and eye open position along with minimal salivation and no response to stimuli showing excellent analgesia as the animal did not show any sign of reparatory depression, hyperthermia and profuse salivation. The animal was carried to an examination table for physical assessment of injuries by positioning it with neck straight, nose clear and on sternal position. On examination, it was found that the animal had severe injury in the gum region with profuse bleeding and with distal diaphyseal fractures of the femur. The actual weight of the Himalayan Ibex was found to be 110kg. Thus, the actual dose received by the animal was (Ketamine

@1.1mg/kg body weight and Xylazine@1.1mg/kg body weight).

The first sign of recovery was noticed within 20 minutes of administering the reversal, and the animal exhibited drug reversal in 80 minutes of administering the reversal injection. The whole capture time was of 120 minutes from the administration of Ketamine and Xylazine mixture till its complete revival.

Wild animals with conservation demand face various physical injuries demanding capture and handling for various veterinary interventions. Capture can be unfavourable causing extreme stress and fear in rescued wild animals leading to capture myopathy and eventual death (Usman et al. 2007). Capture myopathy is a metabolic muscle disease of wild animals (free ranging and captive) associated with capture-related stress and other stresses due to restraint and transportation (Williams & Thorne 1996). It has been reported that Himalayan Ibex capture myopathy is a fatal outcome of stress during capture and handling, which

thus requires extreme care during trapping, handling and transportation of a species of conservation priority (Zahid et al. 2018). In this context, chemical immobilization of a wild animal is a safe and effective strategy as it causes minimal stress (Neilson 1999).

There are no studies on chemical capture of Himalayan Ibex *Capra sibirica* from Ladakh. The drug combination of Ketamine and Xylazine mixture used during this incident to capture the Himalayan Ibex was found to be effective at a dose rate of 1.1mg/kg body weight for Ketamine and 1.1mg/kg body weight for Xylazine. The drug dose used in this instance to capture a Himalayan Ibex is lower to the combinations of Ketamine and Xylazine used for Alpine Ibex as reported by Caulkett & Walzer (2014).

The drug combination used in the study has been referenced for the first time for Himalayan Ibex *Capra sibirica*. The note is based on experience with a single individual and does not account for variations within sub-populations, forage, sex, subspecies or external factors such as weather and different drug combinations. A larger sample size would be advantageous to make the results most rigorous and insightful.

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