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A note on chemical immobilization of zoo animals with blow pipe

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Chemical immobilization in wild animals has been in practice for quite sometime. With advent of newer drugs and devices, immobilization technique has become a practical procedure for restraint of wild animals. The blow pipe, which is used to deliver the drug was developed and described by Wentages (1975), Wiesner (1975, 1977), Ruedi and Voellm (1976) and Haigh and Hopf (1976). It is quite cheap, quick, practical and safe for routine management of zoo animals viz., restraint, surgery, vaccination and clinical diagnostic work etc. In this study various animals were immobilized using Ketamine-xylazine (HBM) or etorphine (M-99) plus xylazine using blow pipe after Wiesner (1977), at Delhi Zoological Park.

The animals, type of drugs, dosage and observations are given in the Table 1.

Immobilization using blow pipe was quite safe and no untoward effects like stress, trauma, fracture, etc. occurred in case of captive wild bovinds, cervids and

large cats. In immobilization of animals by blow pipe one should have a high degree of accuracy in darting aims and in dose estimation in relation to body weight of the animal. The dart thrust on the animal body did not create any physiological disturbances in this study. The only drawback encountered with the use of blow pipe is the length of the pipe (about 5 feet) and short shooting distance about 15 metres.

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Table 1 : Results of immobilization in various zoo animals.

Animal's description (species, sex, age and weight)	Drugs and dosages	Induction period	Observations	Purpose of immobiliza- tion
1. Gnu- <i>Gonnochaetus caurinus</i> , 3 yrs., female, 162 kg.	Etorphine ⁴ -1.7 ml. + Xylazine ⁵ -20 mg.	4 minutes	Pulse rate 52 and respiration 13 per minute. After 40 minutes of induction, 3ml revivon ⁷ given and animal recovered within 2 minutes.	Rectal examination for pregnancy diagnosis.
2. Spotted deer- <i>Axis-axis</i> , Male 4 yrs and 64.5 Kg.	Etorphine-0.7 ml. + Xylazine -0.5 ml.	3.5 minutes	Respiration 11 per minute. Revivon-0.4 ml given after one hour and animal recovered within 2 minutes.	Operation for chronic mandibular swelling.
3. Barking deer- <i>Muticus muntiac</i> , Male, about 7 yrs and 35 Kg.	Etorphine-0.25 ml. + Xylazine	4 minutes	Pulse and respiration rates not recorded. Revivon-0.6 ml. given after 20 minutes and animal recovered within 2 minutes.	Examination for surgical procedure of lower jaw fracture.
4. Sambar- <i>Cervus unicolor</i> , male 1.5 yrs and 70 Kg.	Etorphine-1.8 ml. + Xylazine - 0.5 ml.	5 minutes	Pulse 56 and respiration 5 per minute. Revivon 2 ml given after 25 minutes and animal recovered.	Skin biopsy.
5. Sika deer- <i>Cervus nippon</i> , male 6 yrs and 40 Kg.	Xylazine ⁶ -1.7 ml. +Ketamine	5 minutes	Respiration 22 per minute and temperature 38.8°C. Animal recovered normally after 2 hours.	Restraint

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| 6. Indian Lion- <i>Panthera leo</i> . female 14 yrs. and 116 Kg. | Xylazine +Ketamine—2 ml. | 6 minutes | Salivation; pulse and respiration rates 72 and 10 per minute respectively. Body temperature 38.8°C. Animal recovered after about 3 hours | Premaxillary sinus operation. |
| 7. Tiger- <i>Panther tigris</i> , female 17.5 yrs and 94 Kg. | Xylazine +ketamine 1.8 ml. + 0.5 ml. | 7 minutes | Jerky respiration after induction, 4 per minute and vomitjon. Animal recovered after about 4 hours and respiration was 11 and pulse 68 per minute. | Operation of fistula in the thigh. |
| 8. Jaguar, <i>Panthera-onca</i> , male, 8 yrs and 50 Kg. | Xylazine +ketamine 1.2 ml. | 7 minutes | Vomition, respiration 25 per minute and pulse 66 per minute during the period. Temperature 39°C. Animal recovered after about 2 hours. | Treatment of osteo-dystrophia fibrosa. |

⁴Immobilon-2. 45 mg per ml and acepromazine maleate 10 mg per ml (Reckitt & Colman, Pharmaceutical Division, Hull HUB 7 DS, Britain)

⁵Rompun—Bayer Division, Cutter Laboratories, Inc. Shawnee, Kansas, USA

⁶HBM=Hellabrunn (Xylazine 125 mg+Ketamine 100 mg per ml)

⁷Revivon-Reckitt & Colman, Pharmaceutical Division, Hull, HUB 7 DS, Britain.

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