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Ringneck Pheasant Sedation Trial

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Introduction

Especially in Australia, birds often need to be transported long distances by owners, during relocation of households and or the sale and shipment of birds from one city to another. Depending on the species and state regulations, many bird species will need a permit to cross state borders and the cages they can be carried in may need to comply with International Air Transport (IATA) regulations if commercial couriers are being used. Guidelines for the transport of live wild animals including birds exist from the Convention on International Trade in Endangered Species (CITES) advise against the use of sedatives mainly because the pharmacokinetics and side-effects of drug administration are still not known (https://cites.org/eng/resources/transport/E-TranspGuide.pdf). There is a deficit of knowledge concerning the use of sedatives for transporting birds with few publications specifically concerned with the use of sedation in transport to minimize stress. Haloperidol has been used during transport of ostriches by sea with a recommended dose rate of haloperidol at 15 to 25 mg to treat aggression and abnormal behaviour (Pfitzer and Lambrechts, 2001).

The aim of this trial was to assess a number of chemical sedatives and their effect on pheasants for potential use in transporting birds and decreasing stress.

Materials and methods

An aviary containing a mix of male and female Ringneck Pheasants (*Phasianus colchicus*) was used.

Fifteen birds, a mix of both cocks and hens, were caught and weighed. Three birds were allocated randomly to each of five Groups. Each group was treated with one of five sedation protocols. Each group had either one cock and two hens or two hens and one cock.

The birds were all housed together in a half- open/half -enclosed concrete and earth-floored aviary.

The treatment Groups and protocols were as follows:

Group 1:	Oral Diazepam at 5 mg/kg. Birds 1.35-1.5 Kg.
Group 2:	Injectable Diazepam 1 mg/kg. Birds 1.4-1.5 Kg.
Group 3:	Butorphanol 1 mg/kg and Midazolam 0.2 mg/Kg IM. Birds 1.4-1.6 Kg.
Group 4:	Midazolam 2 mg/kg IM. Birds 1.4-1.7 Kg.
Group 5:	Morphine 1 mg/kg and Midazolam 0.2 mg/Kg IM. Birds 1.3-1.65 Kg.

All birds were observed for posture and alertness.

Results

The birds in group 4 (2mg/kg Midazolam IM) were all sedated by 10 minutes. They were standing but unsteady when touched and appeared to be crouching; they stopped pacing, but could still walk on when prompted; their eyes were half closed and their feathers were fluffed. When these birds were placed in lateral recumbency they were slow to right themselves.

Birds appeared to recover 70 minutes later- walking more and started eating.

The 5 mg/kg oral diazepam birds (Group 1) were mildly sedated (eyes closing; resting a little, slightly fluffed but still moved more than the midazolam injected birds in Group 4) but this treatment took nearly one hour to take effect. Effect overall was much less than the Group 4 birds and this protocol took way too long to work. Questionable value for transport but possibly enough.
The birds in Groups 2, 3 and 5 did not show any visible signs of sedation. They continued to eat normally, remained wary and would walk away in response to any movement by people within the aviary.

Discussion

Midazolam and diazepam are both benzodiazapine tranquilizers which have excellent muscle relaxant properties. Midazolam is longer lasting and more potent than diazepam. Its uptake is also more rapid and predictable when injected intramuscularly when compared with diazepam.

It does not adversely affect mean arterial pressure nor blood gases in species studied (Edling, 2006).

The sedative properties oof intramuscular or intranasal midazolam in psittacine birds have been discussed in the literature, both alone and in combination with butorphanol (Fryer, 2008, Lennox, 2011). Studies have also been undertaken in Canada geese (*Branta canadensis*) (Valverde et al., 1990) and as a combination agent with ketamine-xylazine agent in guinea fowl (Ajadi et al., 2009).

It is interesting to note that although Lennox (2011) has found the combination of midazolam at 0.25-1 mg/kg with butorphanol at 1-3 mg/kg an excellent protocol for sedation in psittacine birds, the combination used in this study on pheasants in Group 3 (butorphanol 1 mg/kg and midazolam 0.2 mg/kg) was found to have no sedative qualities. This may reflect a dose issue rather than a species discrepancy and further trials using butorphanol/midazolam combinations at higher dose rates in pheasants are warranted.

In this study, midazolam given at 2 mg/kg bodyweight intramuscularly appeared to be the most suitable of the protocols selected for the purposes of stress-free transportation of pheasants for short to moderate periods of time. The only area of concern is whether pheasants transported as a group would be able to right themselves and avoid being trampled if they fell during transportation.

An interesting area of further investigation is whether a similar dose of midazolam would be effective if administered intranasally.

Oral diazepam at 5mg/kg resulted in only mild sedation and onset of action was too slow for the purposes of transportation and injection of diazepam at 1 mg/kg intramuscularly appeared to have no sedative effects on the birds. Perhaps a higher dose of 2mg/kg would have been more appropriate.

Intravenous administration of any of the sedatives considered was not investigated because this was not considered a practical option for sedating pheasants in field or aviary situations.

The potential use of alpha-adrenergic agents such as medetomidine or xylazine was not investigated because of their potential for cardiopulmonary and respiratory depression (Edling, 2006). However, at the doses required for sedation these side effects may not be of clinical significance. Further research into the use of these agents in this species requires further research.

Equally, further fine-tuning of the doses of opioids used would be beneficial to find the optimum dose which would keep the birds sedated for a suitable amount of time whilst still allowing the birds to react appropriately to falling and avoid trampling and suffocation.

From this initial study, midazolam injected intramuscularly at 2 mg/kg is a good starting point for ongoing research in this area.

References

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