

## INJECTABLE ANESTHETIC FOR RAPTORS

by

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Generally the most effective anesthetics for birds are gases. They must, however, be administered through a special aspirator and they are expensive. Veterinarians are rarely prepared to use such equipment, and knowledgeable veterinarians are hesitant to use any of their routine anesthetics on birds. This is as it should be, since most anesthetics suitable for mammals would be fatal to birds.

For the past year I have been using Ketalar\* for taking raptor biopsies in the field for pesticide and poison analyses. This hallucinogen has been on the market for about two years and is now widely used in hospitals for infants and small children. In my work it has been used on raptors ranging in size from kestrels to Golden Eagles without ill effect.

Ketalar\*, ketamine hydrochloride, a product of Parke-Davis Company, comes in 20 ml vials containing 10 mg/ml and 10 ml vials containing 50 mg/ml. Bristol markets ketamine hydrochloride in comparable concentrations under the trade name Ketaject\*.

In the field I have found it most practical to use a graph (Fig. 1) for quick reference to determine dosages. The regression lines show the dosages to be used for the weight of the bird for the two solutions of Ketalar\*. These have been worked out by experience on test animals and in the field. Note that the graph extends only to 1000 g. If a bird weighs more than 1000 g it is only necessary to add the dosage for 1000 g to that called for by the increment over 1000 g. For example, a bird that weighs 1245 g is thought of as weighing 1000 + 245 g. With the 10 mg/ml solution of Ketalar\* the dosage would be  $1.2 + .38 = 1.58$  ml. If it is not possible to get the weight in grams, remember that one ounce equals 28.35 grams.

These dosages are the minimum necessary to anesthetize a bird for 10 to 15 minutes. If it is necessary to anesthetize a bird for a longer period of time, a double dose can be given initially or the original dose can be repeated after ten or 15 minutes. Such a dosage can be given repeatedly with no ill effects. Initially three to four times the minimal dose can be given without ill effects or prolonging the anesthetic effect for more than about an hour. Degradation products are rapidly excreted by the kidneys.

Ketamine hydrochloride produces anesthesia within five minutes when given intramuscularly. During this time there may be a period of struggle and it is recommended that restraint be used. The rates of breathing and heart beat rise slightly as the anesthetic takes effect, but after a few minutes they return to

\*Trade names mentioned; these are medical pharmaceutical products. The veterinary pharmaceutical terms are Vetalar—Parke, Davis, and Ketaset—Bristol.

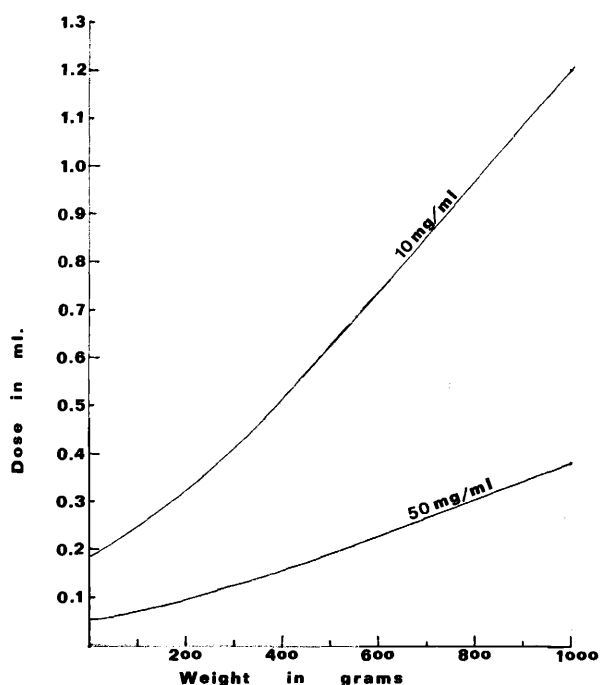


Figure 1. Intramuscular dosages of Ketalar\* for raptors.

normal. This may be deceptive as the "normal" may appear to be quite low. However, since the bird was probably very excited prior to injection, a "normal" respiratory rate and heart beat would be much slower than that observed at injection. Birds should be hooded while under the effects of this anesthetic as their eyes remain open and there is danger of damage to them.

One distinct advantage of ketamine is that pharyngeal and respiratory reflexes are maintained; thus, there is no concern about choking. This must be taken into consideration if operative procedures involve the pharynx, larynx, syrinx or bronchial tree.

A difficulty with ketamine is the long recovery period. Large birds, such as Red-tailed Hawks, may take as long as two hours to regain their coordination. Small birds, with a higher metabolic rate, recover more rapidly. Birds may attempt to fly, use their feet, turn their heads, etc., but they are not able to coordinate these reflexes for some time. Therefore, it is best to keep the bird socked and hooded with a minimum of auditory and tactile stimulation during recovery. I have been unable to determine any particular cue indicating complete recovery. When a bird stands well balanced, grabs directionally with its feet, or bites well, I consider it ready for release. Attempts to fly are poor indicators of recovery.

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