

With my compliments: J.E. Keep.

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**THE USE OF ETORPHINE HYDROCHLORIDE (M99)  
(RECKITT), FENTANYL (JANSSEN) AND HYOSCINE  
HYDROBROMIDE COMBINATION FOR FIELD  
CAPTURE OF WHITE RHINOCEROS**

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Trials have previously been undertaken (Keep, 1968) using Fentanyl citrate (Janssen) alone, and Fentanyl - hyoscine hydrobromide mixtures to immobilize white rhinos *Ceratotherium simum* Burchell. The conclusions reached during these trials were as follows :-

- (a) Fentanyl will immobilize white rhinos, but unless very large doses are used, they remain sensitive to noise and are inclined to get up and move off if disturbed.
- (b) Fentanyl acts more quickly than the alternative narcotic, Etorphine hydrochloride (Player, 1967) with the result that the rhinos do not run so far following darting.
- (c) A spectacularly rapid recovery is observed when the antidote, nalorphine hydrobromide (Burrhoughs Wellcome) is administered intravenously.

Recently, the Natal Parks Board capture team has been forced to catch white rhinos in more thickly bushed, and more rugged country, than before. For this reason, and also to cause less disturbance in the reserve and less strain on the horses and personnel involved, the team felt it would be advantageous to experiment with methods to reduce the time which elapses between darting the rhinos and their coming to a halt. At the same time it was necessary that all the animals should be sufficiently and safely immobilized, and that a favourable response should follow the administration of an antidote.

Trials were undertaken during October 1972 using a mixture of Etorphine, Fentanyl and hyoscine. By using this combination it was hoped to take advantage of the "knock-down" action of Etorphine as well as the quick action of Fentanyl. The hyoscine was included, as in previous white rhino capture drug combinations (Harthoorn 1962 and 1965, Wallach 1966, Player 1967, and Keep 1971), to facilitate the satisfactory loading into the crate, following administration of the antidote. If hyoscine is not included the rhino is able to see too well, and is much too lively to be persuaded to enter the crate. Table 1 gives the particulars of the capture of six white rhinos.

This mixture greatly reduced the immobilizing times compared with those observed when Etorphine and hyoscine alone were used. In addition the immobilization was very satisfactory, and the quantity of the antidote, nalorphine, necessary to get the rhino to its feet in order to be crated was found to be much less than when the conventional Etorphine and hyoscine mixture was used. Table 2 gives the antidote doses administered to the six rhinos captured with Etorphine, Fentanyl and hyoscine.

**TABLE 1. The drugs and dosages used to catch six white rhinos in Umfolozi Game Reserve.**

Sex	Approx. wt. (kg)	Etorphine (mg)	Fentanyl (mg)	Hyoscine (mg)	Remarks.
F	1800	1	35	50	6 mins. Reluctant to walk. 8½ mins. High stepping. "Down" time not recorded, but less than 15 mins.
F	1600 (poor condition)	1	35	50	6 mins. Staggering. "Down" time not recorded. About 10 mins.
M	350	¼	15	12	3 mins. Stopped. 3½ mins. Staggering. 4 mins. Down.
F	600	¼	20	25	3 mins. Staggering. 4½ mins. Down.
F	300	¼	15	12	2 mins. Staggering. 4 mins. Down.
F	600	¼	15	12	4 mins. Staggering. 5 mins. Roped and led into open area. Soon down.

**TABLE 2 The antidote doses used on white rhinos immobilized with an Etorphine, Fentanyl and Hyoscine mixture**

Sex	Approx wt. (kg)	Nalorphine (mg) i/v	Remarks
F	1800	375	1 min. 40 secs. Up and lively.
F	1600 (poor condition)	200	1 min. Lightened. 2 mins. Nearly stood up with stimulus. 5 mins. up and down.
		+	
		75	About 20 mins. after 1st dose. 1 min. Stood up.
M	350	100	1 min. Up and in the crate.
F	600	100	1½ mins. Up and in the crate.
F	300	50	1½ mins. Up and in the crate.
F	600	100	2 mins. Up and in the crate.

The routine doses of nalorphine given to a 1700 kg female immobilized with Etorphine and hyoscine is 375 mg. If the rhino is in poor condition this dose often does not enable the animal to rise. The routine dose for a 350 kg calf is 100 mg nalorphine, and for a 700 kg one is 200 mg.

Since this initial trial a further seventy white rhinos of both sexes and various ages have been captured with the Etorphine, Fentanyl and hyoscine mixture. This has confirmed the initial findings that the mixture is superior to the Etorphine and hyoscine one in the capture of white rhinos in the field for translocation purposes, for the following reasons .—

- (a) It has significantly shortened the time lapse between darting and recumbency.
- (b) The quantity of nalorphine required to neutralize the effect of the narcotic is greatly reduced.

The drug dosages found to be most satisfactory are shown in Table 3.

**TABLE 3. The drug dosages employed to capture white rhinos in the field for translocation purposes.**

Approx. wt. (kg)	Immobilizing Mixture			Antidote Nalorphine (mg) i/v
	Etorphine (mg)	Fentanyl (mg)	Hyoscine (mg)	
1500-2000	1	30	50	250
750-1500	0,50	20	25	100-250
350- 750	0,25	15	12	50-100

The same doses are used upon males and females of equal body weight.

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