

NOTES ON THE CHEMICAL IMMOBILISATION  
AND RESTRAINT OF THE ADDO ELEPHANT  
(*LOXODONTA AFRICANA*)

by

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*Abstract* – The physiological response of Addo elephants (*Loxodonta africana*) to etorphine hydrochloride (M-99) and acetylpromazine maleate is discussed. As in the case of Kruger National Park elephants, the described dosage rates of drugs are highly effective for safe anaesthesia of these elephants.

Five adult Addo elephant, *Loxodonta africana*, were recently captured in order to collect blood and serum samples for a study of their genetic relationship with elephants elsewhere in the Republic of South Africa, as well as to obtain information concerning the degree of inbreeding which may exist in this isolated population (Young, 1971 and Osterhoff, Young and Ward-Cox, 1972).

The shoulder height of the captured individuals, which were all adult bulls, ranged from 255 to 305 cm and the circumference of the forefoot from 110 to 130 centimetres. These animals, which included the biggest herd bull of this population, Lanky, are considerably smaller than most of the 31 elephant bulls captured by Pienaar, van Niekerk, Young, van Wyk and Fairall (1966) in the Kruger Park, in which the circumference of the forefoot of at least 20 individuals exceeded 130 centimetres.

The same immobilising drugs which had been used for the capture of elephant in the Kruger National Park (Pienaar *et al*, 1966) were also employed in this series but at a comparatively higher dosage rate of the main constituent of the narcotic mixture, and administered in accordance with the response of each individual. The results are very briefly summarized for the sake of anybody who may in future suddenly find himself responsible for the capture of these rare and strictly protected animals.

The principal constituent of the narcotic mixture, Etorphine hydrochloride or M-99 (Reckitt & Sons Ltd.) dissolved in dimethyl-sulphoxide (D.M.S.O.), had been administered intramuscularly by means of van Rooyen dart-syringes in initial dosages of 6 to 7 mg per animal. Acetylpromazine maleate (Boots Pure Drug Co. Ltd.), an ataractic, had also been administered at a dosage rate of 40 mg per animal with the initial dose of Etorphine. Elephants not recumbent within 30 minutes

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after these initial injections each received an additional manual intramuscular or intravenous injection of Etorphine; the total dosage of drugs required for recumbency in each of the above animals having been from 7 to 9 mg of Etorphine (administered in the described way) plus 40 mg of Acetylpromazine maleate.

The first reactions (sedation, general paresis, relaxation of the penis, increased rate of flapping of the ears or excessive salivation) were observed from 3 to 10 minutes and locomotory "paralysis" set in from 5 to 30 minutes after the first injection. They were all recumbent from 2 to 10 minutes after receiving the final dose of Etorphine.

Animals lying on their briskets were immediately rolled over on their sides to reduce the enormous pressure of the abdominal viscera against the diaphragm.

The heart rate, respiration rate and rectal temperature of each animal were measured when the animals were first handled and again just prior to the administration of the antidote. The heart rate decreased from 70 to 58 per minute and the respiration rate from 7,5 to 4,5 per minute. There was also a slight fall in the body temperature, from 36,6 to 36,1°C.

The pH of the collected blood samples, saliva and faeces of each animal was measured with a Metrohm pH meter and these results compared with information on elephants in the Kruger National Park. The pH of the blood samples were virtually the same (i.e. Addo: pH 7,4 and K.N.P.: pH 7,3), while the saliva of the Addo elephant (pH 6,2), like that of the Kruger Park elephant (pH 6,9), was also found to be more acid than that of the domestic ox, horse, pig or dog (Schwarz and Hermann, 1924 and Young and Lombard, 1967). The faeces of the Addo elephant (pH 7,4) was more alkaline in comparison to that of the elephants in the Kruger Park (pH 6,7) and this difference may be due to the different food types utilized and differences in the chemical composition thereof.

After having been recumbent for 16 to 30 minutes, the elephants each received 60 mg of the antidote, Cyprenorphine hydrochloride or M-285 (Reckitt and Sons Ltd.) intravenously and were all on their feet after another 2 to 7 minutes.

The described dosage rates of the capture drugs were used without observing any adverse effects and were highly effective for the complete and safe anaesthesia of these elephants.

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