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IMMOBILIZING EUROPEAN WILD HOGS WITH SERNYLAN¹

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ABSTRACT

Fifty-eight trials were made on 41 pen-reared European wild hogs (*Sus scrofa*) injected intramuscularly with Sernylan (phencyclidine). Six hogs (11 percent) died, all at dosages greater than 3:00 mg/lb of body weight. Effective immobilization occurred in 34 cases (58 percent) at dosages of 1.61 to 7.69 mg/lb and effective immobilization did not occur in 18 cases (31 percent) within the same dosage range. Time elapsed from injection to ataxia, immobilization, and recovery averaged 5.9 ± 1.1 minutes, 11.0 ± 3.1 minutes, and 410.9 ± 82.7 minutes respectively. Eleven trials were made of nine wild trapped hogs. Immobilization occurred in six trials at dosages of 1.14 to 3.23 mg/lb, incomplete immobilization occurred in three trials at dosages of 0.81 to 1.09 mg/lb, and death occurred in two trials at 1.95 and 3.33 mg/lb. Average immobilization time for wild trapped hogs was 4.1 ± 0.6 minutes and may indicate less resistance to the drug for wild hogs. The ED_{50} and LD_{50} with corresponding 95 percent confidence limits for pen-reared hogs were 1.9 (3.2-1.1) and 4.3 (6.1-3.1) mg/lb, respectively. The ED_{50} , with 95 percent confidence limits, for wild trapped hogs was 1.1 (1.6-0.7) mg/lb. A fairly rapid immobilization time was a favorable characteristic of the drug. Unfavorable characteristics were long recovery time and absence of a safety factor. Based on the results Sernylan is not recommended for this species. However, if used on European wild hogs, the recommended dosage would be 2.5 to 3.0 mg/lb.

Immobilizing drug studies were made to evaluate compounds that would facilitate handling of European wild hogs. A drug which is safe and can be given by the intramuscular route to produce certain sedation within a short time period would be an asset over the currently used drug, Cap-Chur-Barb, which has both a long pre- and postimmobilization period (Henry and Matschke, 1968). Other drugs evaluated to date offer no advantages over Cap-Chur-Barb (Matschke and Henry, 1969a, 1969b).

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PROCEDURE

Wild-trapped and pen-reared hogs (progeny of trapped and confined wild hogs) were used in this study. Sernylan was either injected intramuscularly into the large muscle of the hip or thigh by an automatic projectile syringe fired from a carbon dioxide operated projector (Crockford et al., 1957) or injected by a hand syringe. If satisfactory immobilization did not occur in approximately 45 minutes, a second dosage was often administered. Times of injection and occurrence of ataxia, immobilization, and recovery were recorded when possible. Recovery was considered to be when the animal regained his footing.

A statistical estimation of the dose necessary to immobilize (ED_{50}) or kill (LD_{50}) one-half of the population from which the sample was drawn, under conditions of our test, with corresponding 95 percent confidence limits was computed by the technique outlined by Litchfield and Wilcoxon (1949).

MODE OF ACTION

Sernylan is an incapacitating agent. It is a stable drug, remains in the body for long periods of time and its effects are not well understood. Therefore, this drug has been restricted to use on animals not normally consumed for human food. Its effect is characterized by calmness associated with catalepsy and sometimes analgesia.

A behavioral response of all immobilized pigs at all dose levels was the grinding of the teeth and padding movements of the forelegs. These movements did not hinder the handling of the animal. This response was similar to that reported by Tavernor (1963) in immobilized domestic swine.

Sernylan acts primarily on the central nervous system either by stimulation or depression. Reactions to Sernylan vary considerably according to animal species and dose rate used (Tavernor, 1963). Its analgesic and anaesthetic effects in the monkey were investigated by Chen and Weston (1960). They administered Sernylan intramuscularly in doses of 0.3 to 15 mg/kg. The drug rapidly produced the effects of calmness, catalepsy, stupor, general anaesthesia or convulsions according to the dose rate given. It was thought to show a departure from other known anaesthetic agents in that its site of action appeared to be in the thalamic region of the brain.

RESULTS

Forty-one hogs were injected with Sernylan (Table 1). Fifteen of these were injected more than once for a total of 58 trials. Six hogs (11 percent) died, all of them at dosages of 3.00 mg or more per lb. of body weight. One hog was not effectively immobilized at a dosage of

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2.91 mg/lb and was later killed at a dosage of 9.09 mg/lb. Effective immobilization occurred in 34 cases (58 percent) at dosages ranging from 1.61 to 7.69 mg/lb. Effective immobilization did not occur in 18 cases (31 percent) at dosages of 1.72 to 5.36 mg/lb (includes one animal later killed).

Five hogs were effectively immobilized at all dosages used. The widest range of effective dosages for an individual was 1.90 to 3.97 mg/lb. Three hogs injected more than once were never effectively immobilized. The greatest range of ineffective dosages for one hog was 1.75 to 3.17 mg/lb. One hog was effectively immobilized

TABLE 1. Effects of Sernylan on pen-reared European wild hogs.

Dosage (mg/lb)	Weight (lb)	Satisfactory				Unsatisfactory	
		Trials	Time elapsed (in minutes) from injection to			Trials	Remarks ^a
Ataxia	Immobilization		Recovery				
1.6	356	1	15	21	212+		
1.7	240-400					2	I.I. ^b
1.8	321-381	2	1-2	2-3	390+-660+	1	I.I.
1.9	308-371	5	3.5-8	5-16	133-424	1	I.I.
2.0	350					1	I.I.
2.1	327	1	6.5	7	1,132		
2.2	320	1	6	9	254+		
2.3	170-250	1		2.5	414	1	I.I.
2.4	295-330	1	1	4	55+	1	I.I.
2.5	375	1	4.5	6	270+		
2.6	350 estimate					1	I.I.
2.7	203-259	3	3.5-7	4-10.5	245-260+		
2.8	195-422	4	3	3.5-17.5	177.5-363		
2.9	237-332	1		2	1,499	2	I.I.
3.0	200-287	1	4.5	5		2	I.I. (1) Died (1)
3.1	130-195	1		2.5		1	Died
3.2	253-335	3	2.7	3-10	377-4,500+	1	I.I.
3.5	292-343	2	2-5.5	7-8	175-459.5		
3.6-9.1	165-394	6	5-27	2.5-109	86-1,920+	10	I.I. (6) Died (4)
Totals	130-422	34	1-27	2-109	86-4,500+	24	I.I. (18) Died (6)

^a Numbers in parentheses indicate number of animals

^b Incompletely immobilized.

zed at dosages of 2.66 and 7.69 mg/lb, but was not effectively immobilized at an intermediate dosage of 4.42 mg/lb. Four hogs not effectively immobilized with initial dosages were later effectively immobilized at higher dosages. The smallest increase in dosage resulting in satisfactory immobilization was from 2.35 to 2.70 mg/lb. However, in direct contrast, one hog was effectively immobilized initially at a dosage of 2.71 mg/lb, but was later injected with a slightly larger dosage of 2.87 mg/lb with unsatisfactory results.

The time elapsed from injection to ataxia averaged 5.9 ± 1.1 minutes and ranged from 1 to 27 minutes for 27 trials in which immobilization was satisfactory. The time elapsed from injection to effective immobilization averaged 11.0 ± 3.1 minutes for 34 trials and the range was 2 to 109 minutes. The average time elapsed from injection to recovery was 410.9 ± 82.7 minutes and the range was 86 to 1499 minutes.

Nine wild-trapped hogs were injected with Sernylan (Table 2) at dosages ranging from 0.81 to 3.33 mg/lb.

TABLE 2. Effects of Sernylan on wild trapped European wild hogs.

Dosage (mg/lb)	Weight (lb)	Time elapsed (in minutes) from injection to			Remarks ^a
		Ataxia	Immobilization	Recovery	
0.81 ^b	154				Not immobilized, weaving at 5 minutes, down at 14 minutes
0.97 ^b	154				Not immobilized, breathing rapid at 7 minutes, up at 10 minutes
1.09	114		5.25		Semi-effective, weaving at 4 minutes
1.14	88		5	192+	Immobilized, ataxia did not occur
1.56	160		3.5		Immobilized, foaming at mouth
1.95 ^b	154		6		Immobilized
1.95	128				Died; urinated at 3.5 seconds, weaving at 1 minute, 45 seconds, out at 2 minutes
2.15	93		3		Immobilized
2.93	205			450+	Immobilized
3.23	93	2	3	37+	Immobilized
3.33	150				Died; defecated at 1 minute, legs kicking at 89 minutes
Totals	88-205	2	3-6	37+-450+	Immobilized (6), incompletely immobilized (3), died (2)

^a Numbers in parentheses indicate number of animals.

^b Same hog.