

AGENCY FOR INTERNATIONAL DEVELOPMENT
WASHINGTON, D. C. 20523
BIBLIOGRAPHIC INPUT SHEET

FOR AID USE ONLY

1. SUBJECT CLASSIFICATION	A. PRIMARY Agriculture	AL72-0000-0000	
	B. SECONDARY Pests of animals		
2. TITLE AND SUBTITLE Evaluation of two chemical compounds as vampiricidal agents			
3. AUTHOR(S) Mitchell, G.C.			
4. DOCUMENT DATE 1971	5. NUMBER OF PAGES 4p.	6. ARC NUMBER ARC	
7. REFERENCE ORGANIZATION NAME AND ADDRESS Interior			
8. SUPPLEMENTARY NOTES (Sponsoring Organization, Publishers, Availability) (Presented at 8th annual reunion, National Inst. for Livestock Research, Palo Alto, Mexico)			
9. ABSTRACT			

10. CONTROL NUMBER PN-RAA- 477	11. PRICE OF DOCUMENT
12. DESCRIPTORS Bats, vampire Poisons Toxic tolerances	13. PROJECT NUMBER
	14. CONTRACT NUMBER PASA RA(ID)1-67 Res.
	15. TYPE OF DOCUMENT

EVALUATION OF TWO CHEMICAL COMPOUNDS AS VAMPERICIDAL

AGENTS.

**Dr. G. Clay Mitchell
Station Leader
BSFW/INIP Vampire Bat Research
Station**

**Paper presented at the Eighth Annual Reunion of the
National Institute for Livestock Research during
January 26-29, 1971.**

The control of vampire bats which cause great economic losses by rabies transmission in Latin America, has had, up to now, limited success. The reason for this is few control methods are known other than physically removing and killing. The only commercially produced control compounds are a mixture of a toxic compound suspended in sugar syrup, honey or vaseline. The product is placed on old bites and vampires feeding on the treated wounds die after eating the control compound.

This is the case of the commercial products known as:

"Vampirol" which is a mixture of 6 gr strychnine sulfate/100.0 ml honey/red food coloring.

"Vampiricida", a mixture of 5 gr white arsenic/95.0 gr colored vaseline. Other compounds are "Melito Veneno Vampiro" and "Unguento Anti-Vampiro".

Though available there are few cattle owners who use these compounds, probably because of the following reasons:

- a) The effectiveness (expressed as percentage of bats feeding on treated cattle actually killed) of this control method has never been ascertained.
- b) Strychnine and arsenic compounds are dangerous to people who do not have experience in handling them.
- c) These compounds are also dangerous to cattle which might ingest it when licking treated wounds.

Therefore the compound can only be applied in a few areas of the body which the cattle cannot lick, and,

- d) The cost of these commercial products is high in comparison to the amount of the product received.

The experiment of which I will talk about was carried out to evaluate one of these compounds, Vampirol, and a phosphorothioated insecticide, which was discussed by Dr. Said in his presentation.

The experimental procedure was as follows:

Phase A.

Days 1-3.

Each evening three Zebu calves (8-10 months) were placed in an indoor cattle corral (5.5 x 4.6 meters) and allowed to acclimate to the surroundings before the experiment. During the daylight hours the calves were released in the corral with the other animals.

Days 3-6.

Fifteen vampire bats were placed with the calves in the indoor corral and allowed to acclimate and establish a feeding pattern. Vampires were kept in a 30-cm-by side cage with heat and humidity sources during the daylight hours and released at dusk. The vampires generally returned to the cage by themselves after feeding from the cattle.

Days 6-8.

Each evening prior to releasing the vampires, bites were treated with Vampirol.

Day 9.

Phase A of the experiment was terminated.

Results

A total of 15 bites were observed during the six nights the vampires fed on the cattle. Eleven of the 15 bites were treated with Vampirol as they were in areas which the calves could not lick (anus, tail, neck), because strychnine is dangerous to cattle if ingested.

Eight of the 11 vampires died during the 3 nights they were allowed to feed on treated cattle: three on the first night, five on the second, and none on the third. This is a killing effectiveness of 73% for Vampirol.

Phase B.

Phase B was repeating the experiment only substituting a phosphorothioated systemic insecticide in place of strychnine as the control compound. This insecticide, Warbex, is registered and has an LD₅₀ of 8.25 mg/kg for male vampires and 2.40 mg/kg for females. These are appreciably higher than the LD₅₀ for strychnine sulfate. Nevertheless, Warbex is more toxic than other compounds we have tested which are safe for use on cattle. For this reason, instead of using a 6.0 gm/100.0 ml ratio (strychnine/honey in Vampirol) a 20.0 gm/100.0 ratio was used (Warbex/honey).

Results

A total of 26 bites were treated with Warbex in honey for three nights. All bites were treated even in areas which the animals could lick. Eleven of 12 vampires died during the three nights they were allowed to feed on the treated calves: one the first night, eight the second, and two on the third, or a killing effectiveness of 91.5%. None of the bovines showed symptoms of intoxication.

From these preliminary results, it appears this systemic insecticide is as effective as strychnine in this method of control. In addition to being effective, Warbex is a registered insecticide which has a large margin of safety for use on cattle thus eliminating the dangers involved for cattle and handler in using strychnine sulfate. The minimum toxic oral dose of Warbex for mature cattle is in excess of 50 mg/kg, thus dangers of poisoning are minimal.

Projected plans include field testing of the insecticide/honey mixture. Though this would not be the control method of choice for ranchers with many animals, or with few animals widely scattered over mountainous regions, it merits further investigation. A rancher with few animals would probably use this approach if he is having heavy predation and shown its effectiveness

The only limitation for Warbex is that it cannot be used in dairy cattle because it has accumulative effects, and is passed in the milk. We are presently investigating several other compounds and expect to have, in the near future, one which could be used in this control system with dairy cattle.

Finally I would like to say that results from this and other studies made by the project, here in Mexico and in Denver, Colo., will permit us, in approximately 6 months, to test, under field conditions, various control techniques for vampire bats.

Thanks!