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LIPHATECH

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STUDY TITLE

Bromadiolone:
Maki Wax Blocks
in Swiss-Webster Mice

DATA REQUIREMENT

U.S. E.P.A. FIFRA Guideline
Subdivision 96-10

AUTHOR

Melanie S. Orth, B.S.

STUDY COMPLETION

December 25, 1990

PERFORMING LABORATORY

LiphaTech, Inc.
3600 West Elm Street
Milwaukee, WI 53209

LABORATORY PROJECT ID

LiphaTech Number 90225

SUBMITTER

LiphaTech, Inc.
3600 West Elm Street
Milwaukee, WI 53209

LiphaTech, Inc. A Liphα Group Company

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LIPHATECH PROJECT NUMBER: 90225
BROMADIOLONE:
MAKI WAX BLOCKS
IN SWISS-WEBSTER MICE

1.0 SUMMARY.

The test material, LiphaTech, Inc. MAKI Wax Blocks, was evaluated for its palatability and efficacy as a rodenticide when offered free choice to albino mice (Swiss-Webster strain) along with a placebo Since 100% mortality was achieved within 8 days, and a 52.1% palatability was obtained, the test material was found to be acceptable, according to the guidelines established in EPA OPP Designation 1.204, Standard House Mouse Anticoagulant Dry Bait Laboratory Test Method, 8-15-80.

2.0 PURPOSE.

The purpose of this study was to determine effectiveness of LiphaTech, Inc.'s Maki Wax Blocks when offered free choice to Swiss-Webster Mice.

3.0 REFERENCE.

This test was conducted and is applicable in connection with registration and enforcement procedures under the Federal, Insecticide, Fungicide, and Rodenticide Act, 40 CFR, Part 160.

4.0 MANAGEMENT OF THE STUDY

4.1 Testing Laboratory

Name and Address: LiphaTech, Inc.
3600 W. Elm Street
Milwaukee, WI 53209

4.2 LiphaTech's Supervisory Personnel Assigned to the Study:

Lab Technicican: Melanie S. Orth, B.S.
Stephen Smith, B.S.
Carol Giuliani, B.S.
Carol Carden, A.S.
Quality Assurance Officer: David C. Joers, B.S.
Study Director: Edward F. Marshall, B.S.

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5.0 TEST SUBSTANCE IDENTIFICATION

Description of Test Substance: MAKI Wax Blocks
Chemical/Common/Trade Name: Bromadiolone, Maki Blocks
Lot/Batch No.: 32390
Composition/Purity: 53ppm
Quantity: 40g/cup/day
Physical State: Solid
Color: green
Density: 41.2 lbs/cu.ft (for Bromadiolone)
pH: N/A
Stability: Stable
Source: LiphaTech, Inc.
EPA Number: 7173-189
Molecular Formula:
3-[3-(4'bromo(1,1'-biphenyl]-4-yl)-3-hydroxy-1-phenylpropyl
-4-hydroxy-2H-1-benzopyran-2-one.
Solubility: 12 mg/L in Water (for Bromadiolone)
Flammability: N/A

5.1 Storage Conditions.

The test substance was stored in a cool, dry place at room temperature.

5.2 Disposition.

The test substances remaining after the test will be retained for future studies.

6.0 TEST ANIMALS

6.1 Animals Used in the Tests.

Twenty healthy, adult Albino mice (Swiss-Websterstrain), ten of each sex, were used in the study. Animals were obtained from Harlan Sprague Dawley, Inc., P.O. Box 29176, Indianapolis, IN 46229. At the start of study, the male mice weighed between 22 and 26 grams, while the female weight range was 20 to 24 grams.

6.2 Animal Care and Maintenance.

The animals were group-caged in elevated screen-bottomed all metal cages, having a bottom surface area of 1,554.5 sq.cm The cages were purchased from Unifab Corporation, 5260 Lovers Lane, Kalamazoo, MI 49002. DACB paper sheets, from Shephard Specialty Papers, Inc., 2001 Hudson Street, Kalamazoo, MI 49005, were used as non-contact bedding under the cages. The papers were changed twice a week. The animal room temperature was measured and maintained at $70 \pm 3^{\circ}F$ through the use of a wall thermostat.

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The relative humidity was stabilized at 20-55%. Both the temperature and humidity were monitored by a Serdex Temperature and Relative Humidity Recorder. A 12-hour light/dark cycle starting at 6:00 AM using artificial lighting not exceeding 200ft candles at cage location was maintained. The foot candles were measured by using a General Electric Type 214 Light Meter. Animals were supplied with tap water, ad libitum. The water bottles were 8oz. French Square Glass Bottles from W.B. Bottle Company, 836 E. Bay Street, Milwaukee, WI 53207. The Rubber Stoppers (#7) were from Fisher Scientific, 1600 W. Glenlake, Itasca, IL 60143. Stainless Steel Sipper tubes from Unifab Corporation, were inserted into each rubber stopper and placed in each water bottle. The water bottles were checked daily. The laboratory and animal room were maintained as limited-access facilities by authorized personnel involved in the testing.

6.3 Justification for the Selection of Animal Species.
Mice were used in this study, because the purpose was to test the palatability and effectiveness of a rodenticide. Also, they are preferred by the U.S. Environmental Protection Agency.

7.0 TEST PROCEDURES.

7.1 Quarantine and Identification of Animals.
Upon receipt, animals were placed in quarantine for 7 days, under the same conditions as for the actual test. While in quarantine the animals were fed Purina Rodent Lab Chow, purchased from Waldschmidt and Sons, Menomonee Falls, WI 53051.

7.2 Selection of Animals.
Animals selected for the test had not been subjected to any previous experimental procedures, trauma, nor disease. Animals selected for the study were chosen from a larger pool of animals.

7.3 Procedures Upon Selection of the Animals.
Selected animals were weighed to the nearest 1.0 gram; the data was recorded on each data record sheet.

7.4 Selection of the Dose.
In order to provide in excess of the daily food requirement of 2 grams per animal per day minimum, a dosage of 120 grams of test substance per cage per day was selected.

7.5 Control Groups.
An untreated control group consisting of 10 males and 10 females was used concurrently with the test group.

7.6 Preparation of the Test Animals.

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The mice were held sex-separate for seven days and acclimated to test conditions for three days prior to exposure to the toxicant.

7.7 Test Substance Distribution.
The test substance and the placebo (Standard OPP Rat and Mouse Challenge Diet: 65% Cornmeal, 25% Rolled Oat Groats, 5% Confectioners Sugar, 5% Corn Oil) were placed in separate small cermaic cups and placed on opposite sides of each cage. Once a day the side of the cage that each cup was placed on was reversed to insure that the animal was consuming the test substance for its palatability, rather than for its placement in the cage. The test substance was available for fifteen days. The placebo was available to the test animals five days following the removal of the test substance or until death. The placebo was available to the control animals for all twenty days of the test period.

7.8 Post-Treatment Procedures.
The test was considered completed after an observation period of five days of the control mice and surviving test mice after the toxicant was removed on Day 15. After death, each animal was weighed and the results recorded on each data sheet.

8.0 RESULTS

8.1 Clinical Observations.
Exclusive of the observed mortality, nothing unusual was observed.

8.2 Body Weights.
The majority of the test animals experienced some weight loss during the course of the study up to the time of death.

8.3 Morbidity and Mortality
All twenty of the test animals died within the first 8 days of the study.

9.0 DISCUSSION AND CONCLUSION.
Based on the test protocol, it can be concluded that the bromadiolone bait, Maki Wax Blocks, is palatable and effective in controlling albino mice. Since 100% mortality was achieved and more than the minimum 33% of the food consumed contained the toxicant, the product is considered satisfactory.

10.0 STORAGE LOCATION OF STUDY MATERIALS

Original Data:	LiphaTech Archives
Final Report:	LiphaTech Archives
Test Substance:	All unused test substance will be retained for future studies.

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11.0 VERIFICATION DATA.

Date of initiation of the study: 12/05/90
Date of completion of the study: 12/25/90
Date of study report: 01/08/91

12.0 SIGNATURES OF SUPERVISORY PERSONNEL.

Study Director: Edward F. Marshall Date: 1-25-91
Edward F. Marshall

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TABLE I. BAIT CONSUMPTION.

	TOTAL BAIT CONSUMPTION(1) (g)	% PALATABILITY(2)
MALE AND FEMALE COMBINED	205.1	52.1%

(1) Bromadiolone, LiphaTech, Inc., Milwaukee, WI.

(2) Expressed as a percentage of total consumption.

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TABLE II. Palatability and Mortality

TEST DAY	% PALATABILITY	MORTALITY
DAY 1	62.1	0/20
DAY 2	57.3	0/20
DAY 3	56.5	0/20
DAY 4	52.5	1/20
DAY 5	51.9	11/20
DAY 6	52.1	18/20
DAY 7	52.1	19/20
DAY 8	52.1	20/20

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