Laboratoire T.E.C.
1, rue Jules Védrines – ZAC Maignon
F – 64600 Anglet

LABORATORY ASSESSMENT OF AN INSECTICIDE SPECIALITY INTENDED TO CONTROL INSECT AND MITES PESTS – Space treatment

Product:

OXYPY

SEPTEMBER 2011
Report n° 1457a2/0711R

Sponsor:

OXY'PHARM
917, rue Marcel Paul
94500 Champigny-sur-Marne
France

LABORATOIRE T.E.C.
1, rue Jules Védrines
ZAC Maignon
64600 Anglet
France

B.Serrano
T.E.C. Director

LABORATOIRE T.E.C.
1 RUE Jules Vedrines - Z.A.C. MAIGNON
64600 ANGLET (FRANCE)
TÉL +33 (0)5 59 52 03 49 FAX +33 (0)5 59 63 35 75
labo.TEC@wanadoo.fr
R.C.S. Bayonne B 337 980 700

PARTICIPANTS TO THE TRIALS

Bruno SERRANO

Trial responsible / T.E.C. Director

Agronomist engineer ENSAT T84

Martine FALQUIER

Trial enginner

Agronomist engineer ENSAR R74

Marie-Paule MONTAUT

Technician

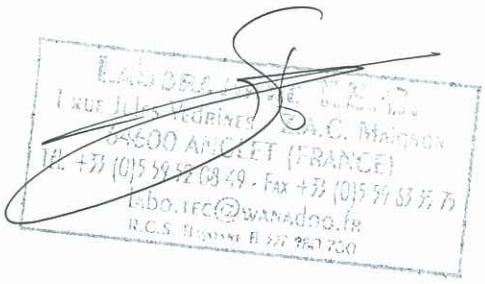
Dominique LARICQ

Technician

BTSA

I, hereby Bruno Serrano, T.E.C. Director certify that the trials presented in this issue were done according to the Good Experiment Practices (G.E.P.) – French Agriculture Ministry agreement 94-021.

Anglet, 8th September 2011



GOOD EXPERIMENT PRACTICES

STUDY TEC N° :	1457a2/0711
SPONSOR :	OXY'PHARM – 94500 Champigny-sur-Marne (France)
PRODUCT :	OXYPY
FACILITIES :	T.E.C. 1 rue jules Védrines 64600 Anglet (France)
TIMING :	Start 19th July 2011
STUDY DIRECTOR :	Bruno Serrano / Agronomist engineer
STUDY ENGINEER :	Martine Falquier / Agronomist engineer

QUALITY INSURANCE RESPONSIBLE : Bruno Serrano /Agronomist engineer

METHODOLOGY :

Adapted French registration standard methodology C.E.B. N°135bis (1st edition: 1989 - Revised Mai 1996) in accordance with the E.P.P.O. Guideline n°135 (bulletin 18, 817-836 1988).
The trial is conducted in accordance with the procedures required to conduct Officially Recognized Trials (EOR), from the european directive 91/414/CE and according to the laboratory agreement by the french Ministry of Agriculture.

ARCHIVAGE : 10 years, papers and electronic files

There were no circumstances which can have affected the reliability of the data presented in this report.

Bruno Serrano / Date : 8th September 2011

LABORATORY ASSESSMENT OF AN INSECTICIDE SPECIALITY INTENDED TO CONTROL INSECT AND MITES PESTS

PURPOSE:

The purpose of this study is to assess the efficacy of an insecticide speciality applied as a space treatment and intended to control insect and mites pests.

The trial was conducted accroding to the french registration standard:

- Méthode C.E.B. 135bis (1ére édition : 1989 Révision : Mai 1996) : "Méthode d'étude de l'efficacité des préparations insecticides et/ou acaricides destinées aux traitements de volumes des locaux de stockage, de transformation industrielle et de commercialisation des produits d'origine animale ou végétale"

Beside of the direct insecticide efficacy, the trial is also measuring the residual activity until 4 weeks on surfaces exposed to the treatment.

This issue follows the standard method design and relates any deviations.

1. EXPERIMENTAL CONDITIONS

1.1. Treatment chamber

The treatment is done in a closed 60 m3 chamber (8 m long x 3 m wide x 2.50 m high) in accordance with the CEB 135bis method and to be close to the reality of use.

The chamber represents the average conditions of a premise. There is no ventilation.

The treatment room is kept in controlled climatic conditions:

20°C±1°C / 65%HR±5%RH / light 1200 lux.

1.2. Insects

Target organisms:

Blattella germanica (German cockroach)
Musca domestica (house fly)
Aedes aegypti (mosquito)
Sarcoptes scabiei (scabies mite)
Dermatophagoides pteronyssinus (house dust mite)

The insects ae from laboratory colony breedings from french official specialized institutes (INRA for the mites and TEC for the others – strain from Wellcome + WHO + INA Paris-Grignon).
The strain are susceptible strains (checked yearly towards main insecticide families).

AGE AND INSTAR OF THE TARGET SPECIES

Scientific name	Common name	Instar	Age
Blattella germanica	german cockroach	adult, male	1 to 3 weeks
Musca domestica	fly	adult	4 to 6 days
Aedes aegypti	mosquito	adult	2 to 4 days
Saroptes scabiei	scabies mite	adult	4 to 6 days
D.pteronyssinus	dust mite	adult+nymph	all instar

For each dose and modality, 25 insects are exposed, except for *Dermatophagoides pteronyssinus*: 200+/-20 all instar mites.

Untreated control:

Some batches of insects are placed onto the same materials treated with water and handled in the same conditions than the materials treated with the product.

2. TREATMENTS

2.1. Product and dosis

The experimental product is provided by OXYPHARM :

OXYPY – ready to use – Lot 230611 EXP 06/2013 REF 4200.001

Dose: 1 ml /m3

2.2. Application of the treatments

The treatments are done by using the fogger device provided by OXYPHARM (brand name : NOCOSPRAY) and set into a corner of the test chamber.

Volume : 1 ml/m3 i.e. 60 ml in the 60 m3 test chamber.

There was no ventilation after the treatment.

The insects are kept 4 hours in the test chamber.

2 replicates are conducted by factor.

Some tiles of materials are set into the test chamber in order to assess the residual activity of the product 4 weeks later.

3. Assessments

3.1. Principle

The experimenter records the mortality at regular time intervals.

After the 4 hours exposure time, the insects (dead and/or alive) are withdrawn from the test and placed into glass jars with food and water sources, in breeding climatic conditions.

The observations are recording two phenomenons:

- knockdown (KD),
- mortality, lethal effect.

Main insecticides are acting on the nervous system and give successive effects: excitation, uncoordination of moves, paralysis (knock down) and lethargy conducting to death.

The paralysis phase depends on the active ingredient and the dosis, some recoveries can occur after a knockdown effect lasting more or less longer.

- knockdown effect : assessed 4 hours or less after teatment
- lethal effect: assessed 24 hours, 48 hours and 7 days after treatment.

As it is not doable to check if insects are knockdown of actually dead, the insects in the tables data will be classified as "dead" or "alive":

- dead (or knockdown): insects unable to move properly
- alive: insects able to move properly

4. RESULTS

4.1. PRESENTATION

The synthesis of data is given in Table I.

The raw data by species and replicate are given in APPENDIX.

Table I: synthesis of data in KT100 (time of exposure to kill or knockdown 100% of the insects):

		DIRECT CURATIVE EFFICACY	RESIDUEL EFFICACY AFTER 4 WEEKS	
			Ceramic tile	Carpet tile
OXYPY	*B.g*	< 1h	< 2h	< 2h
	M.d	< 1h	< 1h	< 1h
	A.a	< 1h	< 1h	< 1h
	S.s	< 1h	< 1h	< 1h
	D.p	< 1h	< 1h	< 2h

B.g = *Blattella germanica* M.d = *Musca domestica*
A.a= *Aedes aegypti* S.s = *Sarcoptes scabiei* D.p = *Dermatophagoides pteronyssinus*

4.2. COMMENTS

During all the trial, the death rates of the Untreated control batches of insects are lower than 5%, the trial is then validated.

The treatment gave a complete and definitive mortality (no recoveries after 24 hours).

The efficacy remains effective until 28 days after application.

5. CONCLUSION

In the conditions of this trial, with the product sample provided, the insects strains and methodology used:

The product **OXYPY**, applied as a space treatment at a rate of 1 ml per m3, has proved:

- A fast and definitive insecticide efficacy against the following pests: the German cockroach, the house fly, the mosquito, the scabies mite and the house dust mite,

- A residual activity of at least 28 days after treatment in laboratory conditions.

APPENDIX

Raw data

REPLICATE 1			1 h			4h			24h			48h			7 days		
			D	A	%M	D	A	%M	D	A	%M	D	A	%M	D	A	%M
OXYPY	Blattella Germanica	H1	25	0	100	25	0	100	25	0	100	25	0	100	25	0	100
		B1	25	0	100	25	0	100	25	0	100	25	0	100	25	0	100
		H2	25	0	100	25	0	100	25	0	100	25	0	100	25	0	100
		B2	25	0	100	25	0	100	25	0	100	25	0	100	25	0	100
			mean		**100**	**mean**		**100**	**mean**		**100**	**mean**		**100**	**mean**		**100**
	Musca Domestica	H1	25	0	100	25	0	100	25	0	100	25	0	100	25	0	100
		B1	25	0	100	25	0	100	25	0	100	25	0	100	25	0	100
		H2	25	0	100	25	0	100	25	0	100	25	0	100	25	0	100
		B2	25	0	100	25	0	100	25	0	100	25	0	100	25	0	100
			mean		**100**	**mean**		**100**	**mean**		**100**	**mean**		**100**	**mean**		**100**
	Aedes aegypti	H1	25	0	100	25	0	100	25	0	100	25	0	100	25	0	100
		B1	25	0	100	25	0	100	25	0	100	25	0	100	25	0	100
		H2	25	0	100	25	0	100	25	0	100	25	0	100	25	0	100
		B2	25	0	100	25	0	100	25	0	100	25	0	100	25	0	100
			mean		**100**	**mean**		**100**	**mean**		**100**	**mean**		**100**	**mean**		**100**
	Sarcoptes Scabiei	H1	25	0	100	25	0	100	25	0	100	25	0	100	25	0	100
		B1	25	0	100	25	0	100	25	0	100	25	0	100	25	0	100
		H2	25	0	100	25	0	100	25	0	100	25	0	100	25	0	100
		B2	25	0	100	25	0	100	25	0	100	25	0	100	25	0	100
			mean		**100**	**mean**		**100**	**mean**		**100**	**mean**		**100**	**mean**		**100**
	Dermatophagoides Pteronyssinus	H1	196	0	100	196	0	100	196	0	100	196	0	100	196	0	100
		B1	208	0	100	208	0	100	208	0	100	208	0	100	208	0	100
		H2	187	0	100	187	0	100	187	0	100	187	0	100	187	0	100
		B2	218	0	100	218	0	100	218	0	100	218	0	100	218	0	100
			mean		**100**	**mean**		**100**	**mean**		**100**	**mean**		**100**	**mean**		**100**
Untr-eated Control	B.germanica	-	0	25	0	0	25	0	0	25	0	0	25	0	0	25	0
	M.domestica	-	0	25	0	0	25	0	0	25	0	1	25	4	3	22	12
	A.aegypti	-	0	25	0	0	25	0	1	24	4	2	23	8	3	22	12
	S.scabiei	-	0	25	0	0	25	0	0	25	0	1	24	0	3	22	12
	D.pteronyssinus	-	0	189	0	0	50	0	2	187	10.6	5	184	2.6	8	181	4.2

H1, H2, B1, B2 = pests locations inside the test chamber (H = high ; B = low)
D = dead or knockdown A = alive %M = % mortality or knockdown

REPLICATE 2			1 h			4h			24h			48h			7 days		
			D	A	%M	D	A	%M	D	A	%M	D	A	%M	D	A	%M
OXYPY	Blattella Germanica	H1	25	0	100	25	0	100	25	0	100	25	0	100	25	0	100
		B1	25	0	100	25	0	100	25	0	100	25	0	100	25	0	100
		H2	25	0	100	25	0	100	25	0	100	25	0	100	25	0	100
		B2	25	0	100	25	0	100	25	0	100	25	0	100	25	0	100
			mean		**100**	**mean**		**100**	**mean**		**100**	**mean**		**100**	**mean**		**100**
	Musca Domestica	H1	25	0	100	25	0	100	25	0	100	25	0	100	25	0	100
		B1	25	0	100	25	0	100	25	0	100	25	0	100	25	0	100
		H2	25	0	100	25	0	100	25	0	100	25	0	100	25	0	100
		B2	25	0	100	25	0	100	25	0	100	25	0	100	25	0	100
			mean		**100**	**mean**		**100**	**mean**		**100**	**mean**		**100**	**mean**		**100**
	Aedes aegypti	H1	25	0	100	25	0	100	25	0	100	25	0	100	25	0	100
		B1	25	0	100	25	0	100	25	0	100	25	0	100	25	0	100
		H2	25	0	100	25	0	100	25	0	100	25	0	100	25	0	100
		B2	25	0	100	25	0	100	25	0	100	25	0	100	25	0	100
			mean		**100**	**mean**		**100**	**mean**		**100**	**mean**		**100**	**mean**		**100**
	Sarcoptes Scabiei	H1	25	0	100	25	0	100	25	0	100	25	0	100	25	0	100
		B1	25	0	100	25	0	100	25	0	100	25	0	100	25	0	100
		H2	25	0	100	25	0	100	25	0	100	25	0	100	25	0	100
		B2	25	0	100	25	0	100	25	0	100	25	0	100	25	0	100
			mean		**100**	**mean**		**100**	**mean**		**100**	**mean**		**100**	**mean**		**100**
	Dermatophagoides Pteronyssinus	H1	188	0	100	188	0	100	188	0	100	188	0	100	188	0	100
		B1	203	0	100	203	0	100	203	0	100	203	0	100	203	0	100
		H2	196	0	100	196	0	100	196	0	100	196	0	100	196	0	100
		B2	202	0	100	202	0	100	202	0	100	202	0	100	202	0	100
			mean		**100**	**mean**		**100**	**mean**		**100**	**mean**		**100**	**mean**		**100**
Untr-eated Control	B.germanica	-	0	25	0	0	25	0	0	25	0	0	25	0	0	25	0
	M.domestica	-	0	25	0	0	25	0	0	25	0	1	25	4	3	22	12
	A.aegypti	-	0	25	0	0	25	0	1	24	4	2	23	8	3	22	12
	S.scabiei	-	0	25	0	0	25	0	0	25	0	1	24	0	3	22	12
	D.pteronyssinus	-	0	189	0	0	50	0	2	187	10.6	5	184	2.6	8	181	4.2

H1, H2, B1, B2 = pests locations inside the test chamber (H = high ; B = low)
D = dead or knockdown A = alive %M = % mortality or knockdown