

Final Abridged Report

BioGenius GmbH, Biology
TechnologiePark, Campus 1
Friedrich-Ebert-Straße 75
51429 Bergisch Gladbach, Germany

Study no. : Mo5361
Report no : BIO172b-15
Date : 2016-04-12
Study Director : E. Gundalai

Title:

Residual efficacy on treated fabric surfaces of a product against House dust mites, *Dermatophagoides pteronyssinus*

Introduction:

The aim of the test was to determine the residual efficacy of product "**Clean it© Health & Sleep**" against House dust mites, *Dermatophagoides pteronyssinus*. Therefore, a residual efficacy experiment was conducted in replicates of three with 50 mites per replicate, where the mites were placed onto the surfaces and were present during treatment.

The dosage applied to the test surface was 1 ml to the 225 cm² surface, which corresponds to the recommended use of 200 ml of product per circa 5 m². The treatment of the surfaces was conducted manually using "**Clean it© Health & Sleep**" pump spray.

The mites were kept in continuous contact with the treated surface throughout the experiment. Specifically, the mites were present on the carpet during treatment and remained on the carpet.

After 3 and 6 months, mites were placed on aged treated surfaces.

Evaluation of mortality was conducted 1, 3, 7 and 14 days after treatment each.

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Product:

Clean it© Health & Sleep

0.5 g / l Pyrethrin and Pyrethroids

5 g / l Piperonylbutoxide

1 g / l Cypermethrin cis / trans + / - 40 / 60

Results:

Average efficacy:

		% knock down and / or mortality after					
		Health and Sleep Pump spray			untreated control		
		200 ml / 5 m ²					
age	Surface No.:	1	2	3	6	temp.	humid.
fresh	time	FA	FA	FA	FA	°C	%
	1d	100	100	100	0	25	60
	3d	100	100	100	0	25	60
	7d	100	100	100	0	25	61
	14d	100	100	100	0	25	62
3 months							
	1d	95	100	100	0	25	63
	3d	100	100	100	0	25	60
	7d	100	100	100	0	25	58
	14d	100	100	100	0	25	55
6 months							
	1d	0	0	0	0	25	56
	3d	30	40	40	0	25	61
	7d	30	50	50	0	26	62
	14d	100	100	100	0	25	63

The product achieved 100 % knock down / mortality within the first day of treatment of mites and surfaces, and this lasted to the last evaluation at 14 days after mites exposure.

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The 3 months aged surfaces showed 98 % knock down / mortality (mean of 3 replicates) within the first day of mite exposure to the treated surfaces, and 100 % knockdown / mortality at the following test days.

The 6 months aged surfaces showed 0 % knock down / mortality (mean of 3 replicates) within the first day of mite exposure to the treated surfaces. After 3 days, the 6 months aged surfaces showed 37 % knock down / mortality (mean of 3 replicates). After 7 days, the 6 months aged surfaces showed 43 % knock down / mortality (mean of 3 replicates). After 14 days, the 6 months aged surfaces showed 100 % knockdown / mortality.

The untreated control population did not suffer any mortality during the course of the experiment.

Conclusion:

After 6 months, Clean it© Health & Sleep still shows an efficacy of 100 % after 14 days.

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Study Director:

i. A. Hans-Joachim Lunkes

The biological results are only valid for the samples received in the laboratory. This report contains the unpublished results of biological work by BioGenius GmbH. These results may not be published, either wholly or in part, or reviewed or quoted in any other publication without the authorisation of the sponsor.

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Standard method no.: BioG B 903-01 (modified)

Test method for finding the residual effect of pump sprays on mites (manual treatment of materials).

Formulations: The method is suitable for pump sprays.

Surfaces: Suitable materials are porous fabric fixed to plywood tiles (sized 15 x 15 cm = 225 cm²).

Test individuals: The test is suitable for house dust mites.

Treatment of surfaces: The test surfaces are positioned inside a holder and held at an angle of 45 °. From a defined distance, measured from the centre of the test material i.e. surface up to the spray nozzle, the pump spray is actuated manually, so that the application strikes the materials perpendicularly. Later on the materials are transferred to the air conditioned laboratory.

Individuals and evaluation: The house dust mites are kept on the surfaces inside glass rings (diameter 9.5 cm, height 5.5 cm, upper part of inner walls lined with glue).

The mites are continuously exposed to the surfaces, beginning one day after treatment. The surfaces and their mites are stored in the dark. Once the mites are exposed to the surfaces, the evaluations for mortality are made at defined test times: 1, 3, 7 and 14 days after initial exposure. The test is conducted one day, three months and six months after treatment of the surfaces

3 replicates are conducted per treatment; with approx. 50 mites per replicate.