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**EVALUATION OF ACARICIDAL ACTIVITY OF AN
ELECTRONIC ULTRASOUND EMISSION DEVICE
(BATTERY/MAINS-POWERED) CALLED “MITE LESS”**

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1. INTRODUCTION

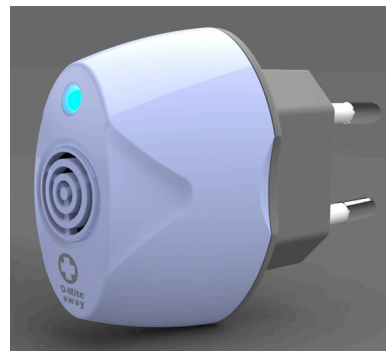
One of the emerging health problems in Italy is that of skin complaints in humans caused by the action of biting arthropods present in enclosed environments. The presence of these arthropods is often associated with the presence of other arthropods capable of causing respiratory pathologies, mainly asthmatic, but sometimes characterized by serious pneumo-bronchial inflammation or inflammation of the upper respiratory tract. In the case both of skin complaints and of allergic pneumopathies, the identification of the pathogen agents, their quantification and above all the identification of their breeding grounds are indispensable factors in achieving a definitive environmental solution that will relieve the symptoms without subjecting patients to prolonged topical treatments that are often inefficacious.

The product in question, hereinafter called “**MITE LESS**”, is marketed as an “*effective electronic device against dust mites*”.

To this aim, the company Promogreen.com, with registered office at 27 Via Emilia, Voghera (PV), has asked myself, Professor Vincenzo Cuteri, Professor of Microbiology and Parasitology, Professor of Infectious Diseases and Avian Pathology and Chief of the Medical Microbiology and Infectious Diseases Laboratory of the School of Veterinary Medical Sciences of the University of Camerino, to verify the effectiveness of the ultrasounds emitted by “**MITE LESS**” in reducing the concentration of dust mites in samples of dust collected inside dwellings (*indoor*).

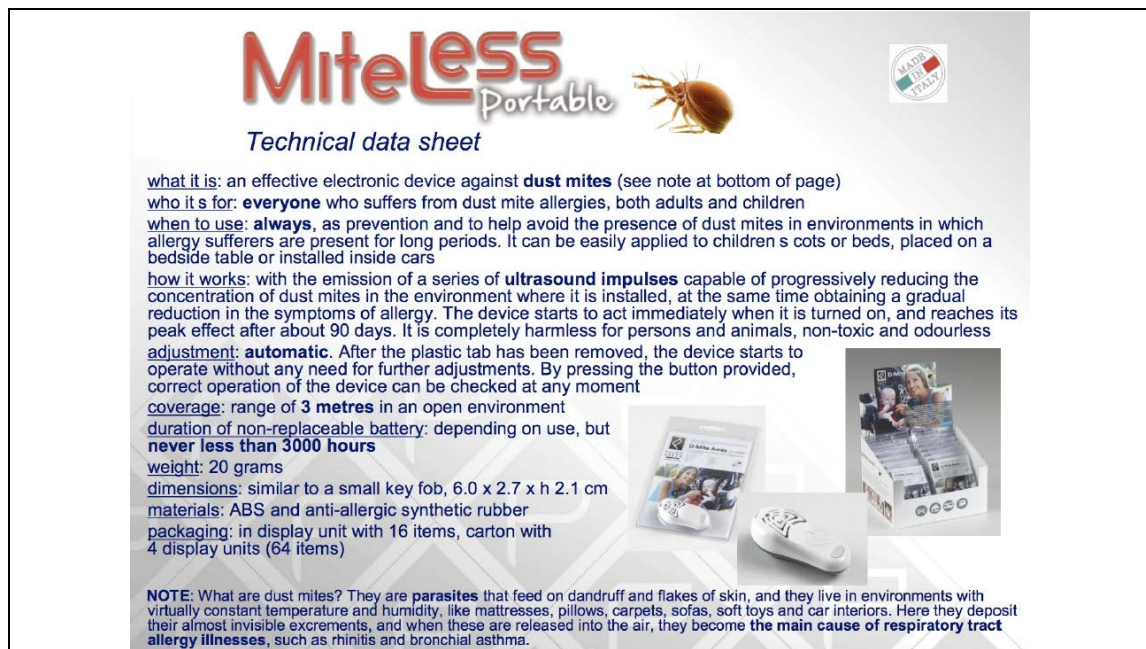
2. QUALITATIVE AND QUANTITATIVE DESCRIPTION OF “MITE LESS”

- The product is sold in single packs and is identified as in the photographs.



3. PROPERTIES AND CHARACTERISTICS OF "MITE LESS"

The Technical Information Sheet provided by the manufacturer is shown here:



MiteLess Portable

Technical data sheet

what it is: an effective electronic device against **dust mites** (see note at bottom of page)

who it s for: **everyone** who suffers from dust mite allergies, both adults and children

when to use: **always**, as prevention and to help avoid the presence of dust mites in environments in which allergy sufferers are present for long periods. It can be easily applied to children s cots or beds, placed on a bedside table or installed inside cars

how it works: with the emission of a series of **ultrasound impulses** capable of progressively reducing the concentration of dust mites in the environment where it is installed, at the same time obtaining a gradual reduction in the symptoms of allergy. The device starts to act immediately when it is turned on, and reaches its peak effect after about 90 days. It is completely harmless for persons and animals, non-toxic and odourless

adjustment: **automatic.** After the plastic tab has been removed, the device starts to operate without any need for further adjustments. By pressing the button provided, correct operation of the device can be checked at any moment

coverage: range of **3 metres** in an open environment

duration of non-replaceable battery: depending on use, but **never less than 3000 hours**

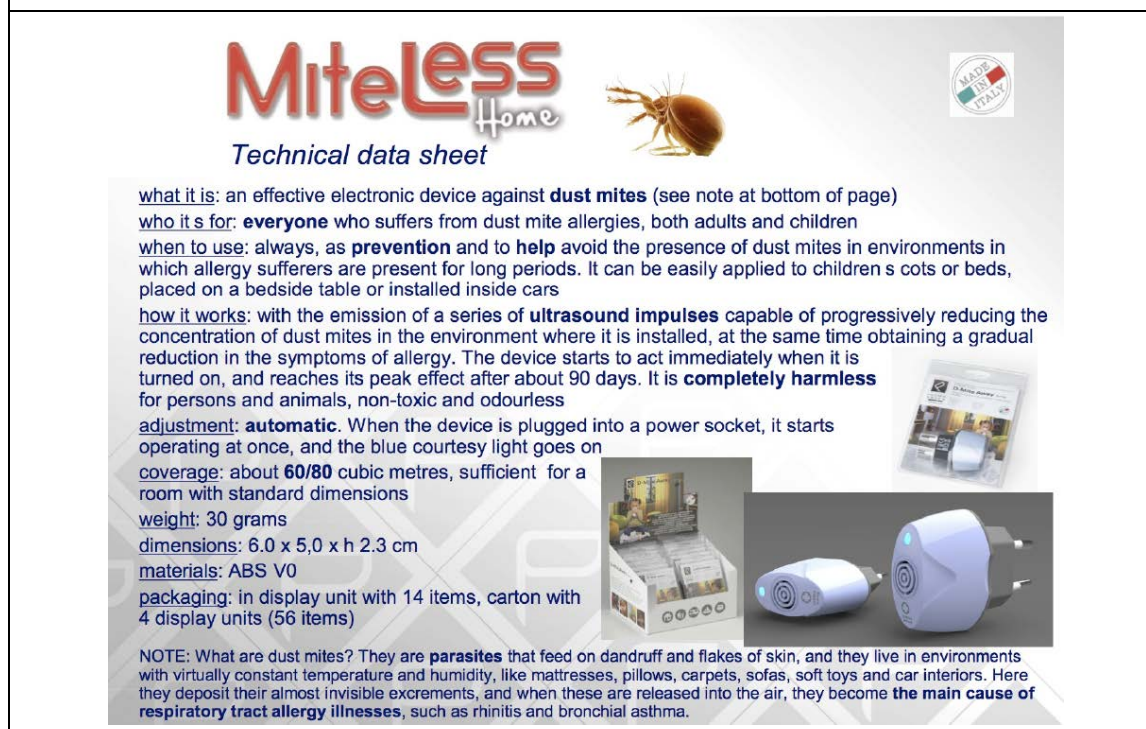
weight: 20 grams

dimensions: similar to a small key fob, 6.0 x 2.7 x h 2.1 cm

materials: ABS and anti-allergic synthetic rubber

packaging: in display unit with 16 items, carton with 4 display units (64 items)

NOTE: What are dust mites? They are **parasites** that feed on dandruff and flakes of skin, and they live in environments with virtually constant temperature and humidity, like mattresses, pillows, carpets, sofas, soft toys and car interiors. Here they deposit their almost invisible excrements, and when these are released into the air, they become **the main cause of respiratory tract allergy illnesses**, such as rhinitis and bronchial asthma.



MiteLess Home

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adjustment: **automatic.** When the device is plugged into a power socket, it starts operating at once, and the blue courtesy light goes on

coverage: about **60/80** cubic metres, sufficient for a room with standard dimensions

weight: 30 grams

dimensions: 6.0 x 5.0 x h 2.3 cm

materials: ABS V0

packaging: in display unit with 14 items, carton with 4 display units (56 items)

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4. EVALUATION OF ACARICIDAL ACTIVITY

The ACARICIDAL activity of the product was evaluated on dust samples collected in dwellings situated in the city centre of Perugia.

All samples were constituted by dust collected using a dustpan and brush in bedrooms in different dwellings. The dust collected was then placed in sealed plastic containers and sent to the laboratory.

After having verified the presence of dust mites using the method of “Direct examination of environmental dust” (EDPA®), capable of verifying and quantifying the presence of dust mites, samples were subjected to experimentation.

The dust samples were therefore inserted in sealed glass containers that were randomly assigned to Group 1, the experimental group in which the “*MITE LESS*” product was activated, or to Group 2, the control group, in which the non-activated “*MITE LESS*” product was inserted.

For this purpose 4 samples were used in Group 1 and one sample in Group 2.

Considering that the reproductive cycle of dust mites is on average about 20 days, the EDPA test was therefore carried out:

T0: start of experimentation, 24 hours before the insertion of the “*MITE LESS*” product in the container

T1: 7 days after the insertion of the “*MITE LESS*” product in the container

T2: 25 days after the insertion of the “*MITE LESS*” product in the container

T3: 50 days after the insertion of the “*MITE LESS*” product in the container

T4: 75 days after the insertion of the “*MITE LESS*” product in the container

T5: 90 days after the insertion of the “*MITE LESS*” product in the container

The results obtained are shown as follows:

TIME	Group 1				Group 2
	no. 1	no. 2	no. 3	no. 4	no. 5
T0	+++++	+++++	+++++	+++++	+++++
T1	+++++	+++++	+++++	+++++	+++++
T2	+++++	+++++	+++++	+++++	+++++
T3	++++	+++	+++	+++	++++
T4	+++	+	++	++	+++++
T5	++	-	+	-	++++

5. CONCLUSIONS

The results obtained 90 days after activation of the product demonstrate the effectiveness of “*MITE LESS*” in reducing the concentration of dust mites in all dust samples examined, even though with different concentrations.

In the control sample, with the product “*MITE LESS*” present but not activated, no significant reduction was noted in the quantity of dust mites during the entire test.

The effectiveness of “*MITE LESS*”, although it already started to appear after 50 days, became evident only 75 days after the switching on of the ultrasound transmitter. This result is in accordance with the mechanism of action of the product “*MITE LESS*”, which should act by significantly inhibiting the reproductive capacity of mites and with the reproductive cycle of dust mites, corresponding to a period of about 20–25 days.

75 days after switching on the device, the average reduction of mites in the 4 samples came to about 60%.

The data on the concentration of dust mites at 90 days were zero in two dust samples (samples 2 and 4), considerably lower (over 80%) in the third sample, and with a reduction of 60% in sample no. 1.

Dust mites are one of the main causes of allergies.

The allergens involved in the onset of allergic symptoms are closely correlated to the quantity of mites present in the environment.

“*MITE LESS*” seems able to affect the reproduction of mites and their feeding behaviour, thereby interfering with their general reproductive cycle, and consequently producing a significant reduction in the number of parasites in the environment, as shown by the “*in vitro*” test carried out.

No hearing disturbances were reported by operators during the entire experimentation phase.

The results obtained with the application of “*MITE LESS*” confirm the “*in vitro*” effectiveness of the product, which can therefore be used in environments in which the presence of dust mites has been confirmed, reducing their concentration and therefore the production of harmful allergens, or as an alternative even in unaffected environments, to prevent their proliferation.



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A handwritten signature in black ink, appearing to read 'Vincenzo Cuteri'.