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To RAYCOP JAPAN INC.

Study Report

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1. Study name Examination of allergen removal effect by suction activity using bedding cleaner

2. Specimen

Specimen	VCEN-100
Control	No suction

3. Test summary Fifty mg of house dust was sprayed on the outer fabric surface or inside (surface of the inner cotton) of bedding (hereafter spraying region), and suction was performed for the spraying region using the specimen by making fixed times of round trips at 20 cm/second of speed. (Figure 4-1) Regarding spraying of the inside of the bedding, suction was performed from the top of the outer fabric. After that, allergen was extracted from the spraying region (hereafter extraction liquid) and the amount of residual allergen was measured by ELISA. The same treatment was performed for the control except for suctioning.

4.Test conditions

Suction target	Pseudo-bedding contaminated with allergen Bed pad[*1]: Outer fabric: polyester 100% Inner cotton: polyester 100% [*1]Bedding that was normally used for tests in ITEA was utilized.
Target allergen	Allergen derived from excrement of Dermatophagoides farina, Der f 1
Target allergen configuration	House dust (special ordered item, made in ITEA)
Spraying amount	House dust 50 mg
Suction speed	20 cm/seconds
Suction time	Equivalent of 3 min/m^2 (Successive 3 round trips per spraying region) Equivalent of 4 min/m^2 (Successive 4 round trips per spraying region) Equivalent of 5 min/m^2 (Successive 5 round trips per spraying region)
The number of samples	n=3
Measurement of allergen	Sandwich ELISA*2 *2 Samples for measuring were prepared by diluting extraction liquid with a diluent for ELISA measurement at a proper dilution ratio.

Evaluation method　　An allergen residual rate was obtained using the following formula.

Allergen residual rate (%) ＝ X /Y×100

X: The amount of residual allergen per spraying region after suction (ng)

Y: The amount of residual allergen per spraying region in the control (ng)

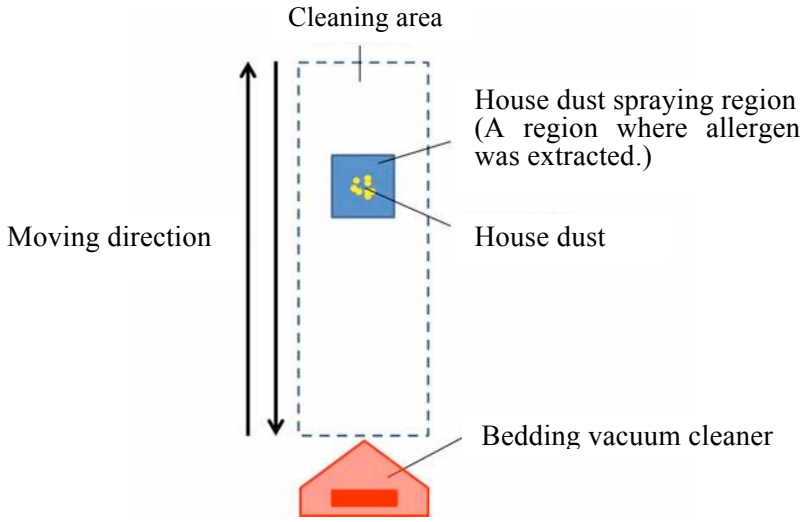

Figure 4-1. A Diagram of the test

5. Results

Table 5-1. The amount of residual allergen per spraying region (Der f 1) and allergen residual rate

Part sprayed	Test classification	Residual allergen amount (ng)	Mean value (ng)	Standard deviation	Allergen residual rate (%)
Surface of bedding	Equivalent of 3 min/m^2 (3 round trips)	76.11 71.16 146.06	97.78	41.9	0.7
	Equivalent of 4 min/m^2 (4 round trips)	86.04 146.09 89.55	107.23	33.7	0.8
	Equivalent of 5 min/m^2 (5 round trips)	84.71 46.98 53.43	61.71	20.2	0.5
	No suction	12993.96 13479.51 14255.64	13576.37	636.4	-
Inside of bedding (Surface of the inner cotton)	Equivalent of 3 min/m^2 (3 round trips)	8260.31 7876.20 8639.61	8258.71	381.7	62.0
	Equivalent of 4 min/m^2 (4 round trips)	7325.58 7516.65 7754.81	7532.35	215.0	56.6
	Equivalent of 5 min/m^2 (5 round trips)	7427.93 6824.34 6175.31	6809.19	626.4	51.1
	No suction	13001.49 13823.51 13129.59	13318.20	442.3	-

6. Additional statement

Results of this study cannot be compared with study results that were obtained by a different experimental system or condition.

Test start date: April 17, 2017
Test end date: April 21, 2017

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