



Final report

Study on the filter efficacy of a pollen screen from the company trittec AG Deutschland

1. Study request

On behalf of trittec AG Deutschland, a textile material was to be tested for suitability in preventing the passage of airborne pollen.

The objective of the investigation was to verify whether birch pollen from outdoor air could be prevented from entering interior living areas.

2. Study design

The pollen was measured in an experimental 'pollen chamber' with two empty rooms.

The rooms (hereafter referred to as Room A and Room B) are part of a two-room pollen chamber, located on the top floor of the Clinic for Dermatology, Venereology and Allergology of Charité Berlin, Luisenstr. 2-5, 10117 Berlin, Germany.

Both rooms were thoroughly cleaned before the study using a mechanical wet cleaning method. The rooms were only entered for the purpose of monitoring with Burkard pollen traps.

The pollen screen was attached with a Velcro fastener to the frame of the open window between the two rooms. This window measured 49 x 49 cm.

Room B, which measured 15.9 sq m, represented the pollen-laden outdoor air. Various pollens of varying sizes were released into this room using a standardised procedure. These pollens were able to move through the open window into Room A, which represented the living situation, e.g. a bedroom.

The pollen that had entered Room A (room size 16.6 sq m) was measured using a Burkard pollen trap located in the room. This is a standard measuring device in Europe (1).

The pollen trap measurement was evaluated by experienced pollen analysts in the Allergy-Centrum-Charité for the purposes of the study. The specimens collected were archived for later inspection.

The preparation technique, classification and evaluation of the pollen collection with the Burkard pollen trap in the study were conducted according to the current recommendations of the German Pollen Information Foundation, as noted below (2).

The type of birch pollen most responsible for allergic diseases in Central and Northern Europe was used for the test.

5. Test procedure

The following tests were conducted:

1. The amount of pollen in Room A that had entered from Room B (outdoor air) through the open window (without pollen screen) was measured over a period of eight hours. As a rule, these measurements were taken three times using the same procedure.

2. The total amount of pollen in Room A was measured with the window closed. The pollen concentration in Room A was also measured over a period of eight hours after releasing the pollen in Room B with the window closed.

3. While using the pollen screen, which was attached to the window, the pollen concentration in Room A was measured after releasing the pollen in Room B over a period of eight hours. As a rule, these measurements were taken three times using the same procedure.

6. Evaluation

The amount of pollen in Room A following the use of the pollen screen was expressed as a percentage of the amount of pollen that had entered through the open window, i.e. without the pollen screen, as well as the absolute amount of pollen that had entered. The defined evaluation period was eight hours.

7. Results

After the release of 20 mg of birch pollen (figure 1) in Room B, an average of 3068.3 ($\pm 394,6$) of birch pollen was detected in Room B with the window closed in three trials within a period of eight hours (figure 2).

After the release of 20 mg of birch pollen in Room B, an average of 739 (± 108) of birch pollen was detected with the window open in three trials within a period of eight hours. After the pollen screen was attached, an average of 102 (± 57) of birch pollen was detected in Room A in three trials within a period of eight hours. This corresponds to 13.8% ($\pm 7.7\%$) of the pollen that entered the room through the open window (figure 2).

The efficiency of the pollen screen against birch pollen was therefore 86.2% (median score). This means that the pollen screen almost completely prevented the birch pollen from entering.

8. Summary

The tested material demonstrates very high efficiency in preventing the passage of airborne birch pollen.

According to the available data, the pollen screen is suitable for providing many pollen allergy sufferers with effective protection against airborne pollen.

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Correctness of translation certified

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Figure 1. Birch pollen.

Birch pollen has three pores and measures approx. 19-25µm. The peak season in Germany is from March until May. Photos © www.paldat.org

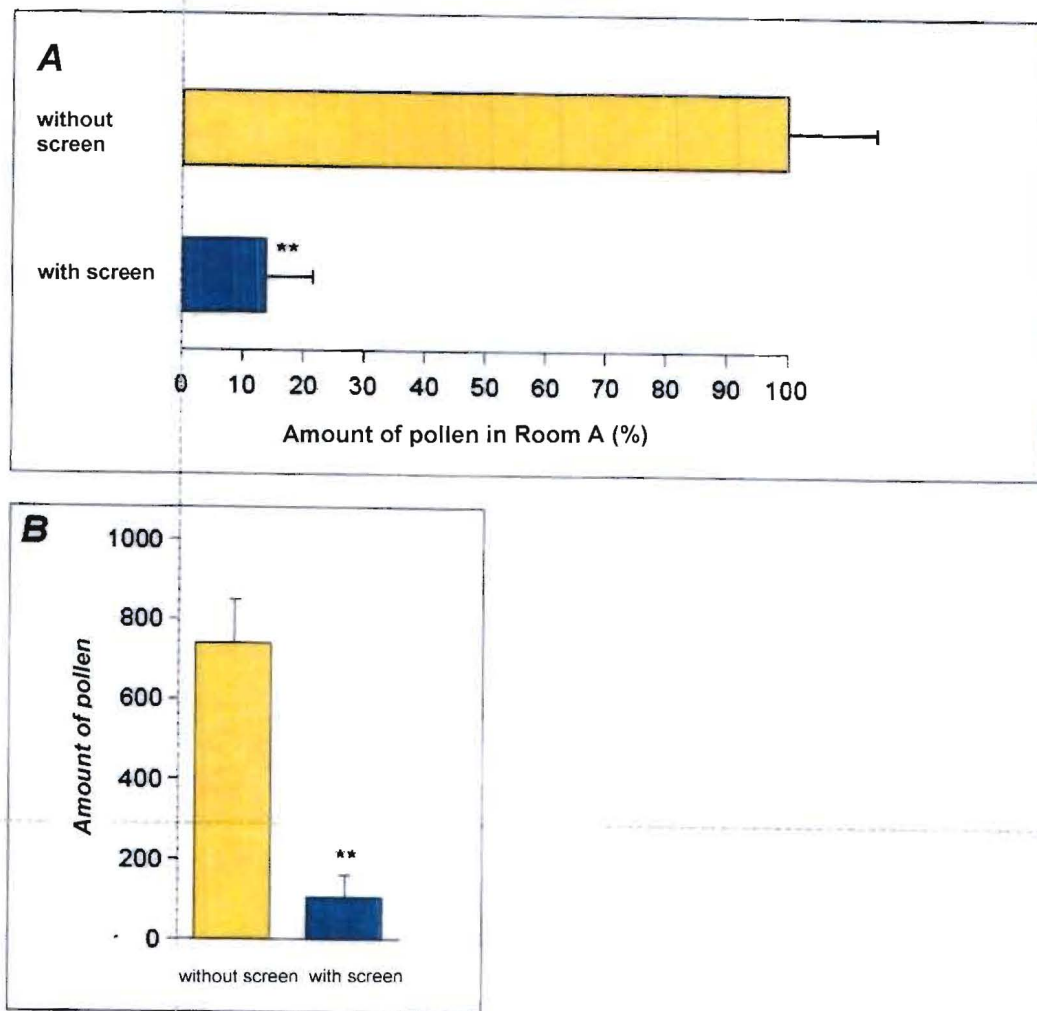


Figure 2. Birch pollen measurements.

The amount of birch pollen in the inner chamber (Room A) was measured within an eight hour period after the release of 20 mg of birch pollen in the outer chamber (Room B). The data are depicted as a graph. **A**, as a percentage of the amount of pollen that had entered the room through the open window, i.e. without pollen screen, and **B**, the total amount of the pollen that had entered. Three independent measurements were taken on different days for each group, **= $p < 0.01$ (Student's t-test). The total amount of birch pollen in the virtual outdoor air (B) was 3068.3 ± 394.6 .

References

1. Hecht, R. and Winkler, H.: Empfehlungen zum Einsatz von Burkard-Pollenfallen bei der Erfassung von Tagespollenimmissionen (Recommendations on the use of Burkard pollen traps in the recording of daily pollen emissions). 3. Europäisches Pollenflug-Symposium (European Airborne Pollen Symposium) 4-6 February 1994, lectures and reports 1994. 131-133
2. Hecht, R. and Winkler, H.: Empfehlungen zur Präparationstechnik, Bestimmung und Auswertung bei der Pollenflugerfassung mit der Burkard-Pollenfalle (Recommendations for preparation techniques, classification and evaluation in the detection of airborne pollen using the Burkard pollen trap). Europäisches Pollenflug-Symposium (European Airborne Pollen Symposium), 4-6 February 1994, lectures and reports. 135-141