"Blue air" aircleaner - results from four experimental runs to estimate the clearance capacity of aerobic, airborn bacteria indoors.

Material. 1) A "Blue air" aircleaner with a system of filters called "HEPA-Silent" and UV-light; 2) A Sartorius air sampler MD8 connected to a 80 mm gelatinfilter (3,0 µ) in a filter holder by a tube; 3) Blood agar plates (standard, with around 7 % horse blood;); 4) A thermostate box with a temperature of 36 C°+/- 1 C°.

Method. The aircleaner was put on the floor in a room around 25 m^2 in size (total air volume around 80 m^3). It was run for 6 times 10 minutes in each experiment, 4 whole runs in total. Two runs were done with air passing the "HEPA-Silent" filter system without UV-light (twelve 10 minute runs) and two runs were done with air passing the "HEPA-Silent" filter system and with the UV-light on (twelve 10 minute runs).
The number of bacteria in the room was measured alternatingly in front of or behind the "Blue air" aircleaner by running the Sartorius air sampler for 60 minutes (6 times 10 minutes) in each experiment. For each 10 minutes period one m^3 of air was sampled. After each run the gelatin filter was removed aseptically from the filter holder and put on a blood agar plate that was incubated in a thermostate box for 48 hours. The number of bacteria on each plate after 10 minutes run, 24 blood agar plates in total, were counted and the results were compared (table 1).

Results. 1) With the "HEPA-Silent" filter system the number of colony forming units (CFU) per m^3 of air in front of the aircleaner varied between 50-15 (6 runs) and behind the aircleaner between 3-1 (6 runs). The reduction of bacteria was in the range of 90-95 %.
2) With the "HEPA-Silent" filter system and UV-light together the number of CFU/m^3 of air in front of the aircleaner varied between 200-9 (6 runs) and behind the aircleaner between 30-1 (6 runs). The reduction of bacteria was in the range of 85-98 %.
For further information - see table 1!

Summary. The efficiency of the "Blue air" aircleaner was tested in a room with a total air volume of around 80 m^3 and with 1-3 persons working in that room. In total, four experiments were done, with a quarter of the runs (6) done by measuring the number of bacteria (CFU/m^3) after air had passed through a "HEPA-Silent" filter system and another quarter of the runs (6) by counting the number of bacteria after air had passed both through a "HEPA-Silent" filter system and UV-light. The reduction of bacteria in the air, after passing the "HEPA-Silent" filter system or the "HEPA-Silent" filter system and UV-light, was in the range of 90-95 %. No difference was seen between the two systems.

"Blue air" aircleaner - Table 1

Experiments with "HEPA-Silent" filter	Experiment number 1 Number of CFU/m^3	Experiment number3 Number of CFU/m^3
In front of aircleaner (10 min.)	16	25
Behind aircleaner (20 min.)	3	2
In front of aircleaner (30 min.)	28	47
Behind aircleaner (40 min.)	1	2
In front of aircleaner (50 min.)	15	50
Behind aircleaner (60 min.)	1	2

Experiments with "HEPA-Silent" filter and UV-light	Experiment number 2 Number of CFU/m^3	Experiment number 4 Number of CFU/m^3
In front of aircleaner (10 min.)	200	59
Behind aircleaner (20 min.)	30	12
In front of aircleaner (30 min.)	55	47
Behind aircleaner (40 min.)	1	2
In front of aircleaner (50 min.)	9	50
Behind aircleaner (60 min.)	2	2

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