

Information about Wilms® HygienicWood

Summary of research projects, investigations and examinations 1996-2012



Contents



	Page
1. Research projects.....	3
1.1 Hygienic and phytosanitary properties of wood and wood products.....	3
1.2 Germ reduction by Wilms® Hygienic Wood compared to other materials.....	6
1.3 Hygienic Wood Pallets in the Food Industry.....	7
1.4 Wilms® Hygienic Wood - Useful against Aspergillosis?.....	8
1.5 Patient rooms equipped with wooden furnishings.....	9
1.6 Influence of Wilms® Hygienic Wood bedding material on the health of broiler chickens.....	10
1.7 Wood and Hygiene - A Contradiction?.....	11
1.8 Investigation: Shopping Carts.....	12
1.9 Foot Fungus-Prevention through Wilms® Hygienic Wood Bath Mats.....	13
1.10 Protection against mites as an end effect of two types of Wilms® Hygienic Wood Bed Mats.....	14
1.11 Influence of Cembra Pine on quality of sleep and relaxation.....	15
1.12 Influence of a pine heartwood constructed room on people in an everyday living situation.....	16
1.13 Pine heartwood against the flu?.....	17
1.14 Effectiveness and tolerability of PineVital Liquid Care as a skincare product	18
1.15 Effectiveness of PineVital Liquid Care against the Herpes Simplex Virus Type 1.....	19
1.16 Alleviation of allergies through the use of HygienicWood Bed Mat?.....	20
2. European Patents.....	21
3. Contact Info.....	22



1. Research projects

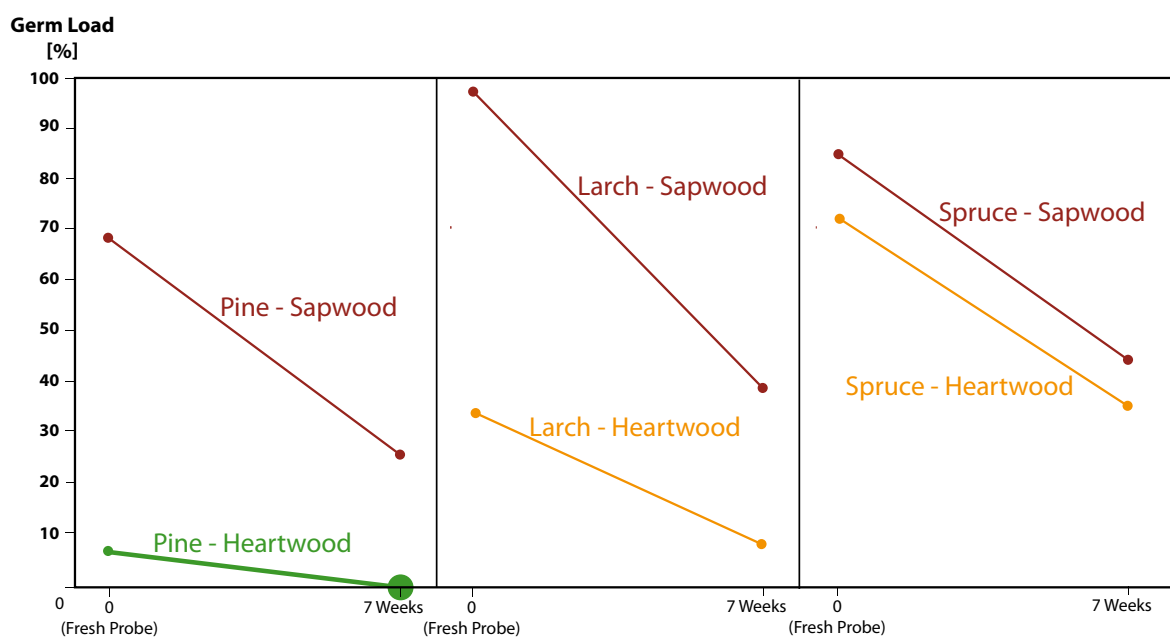
1.1 Hygienic and phytosanitary properties of wood and wood products¹

Objectives

Does wood have antibacterial properties? And if so, does the wood species and different factions make a difference?

Approach

The test materials were 1×10^6 cfu / cm² (total number of bacteria live per sq. cm) infected with the E.coli bacterium. The development of bacterial populations was during a 7-week storage period, and is seen in the graph shown below.



Result

The results clearly show that when assessing the germ- and bacteria-killing effects of wood, the differentiation between not only the species of the tree is important, but which section of the tree is also crucial.

Conclusion

Germs are most rapidly decreased and killed on pine heartwood.



Implementation

Annett Schönwälder, Biologische Bundesanstalt für Land- und Forstwirtschaft, Institut für Pflanzenvirologie, Mikrobiologie und biologische Sicherheit, Messeweg 11/12, 38104 Braunschweig, 2000.

* Data: Schönwälder, Annett (2000), S. 17; Graphical composition: Fa. Wilms GmbH

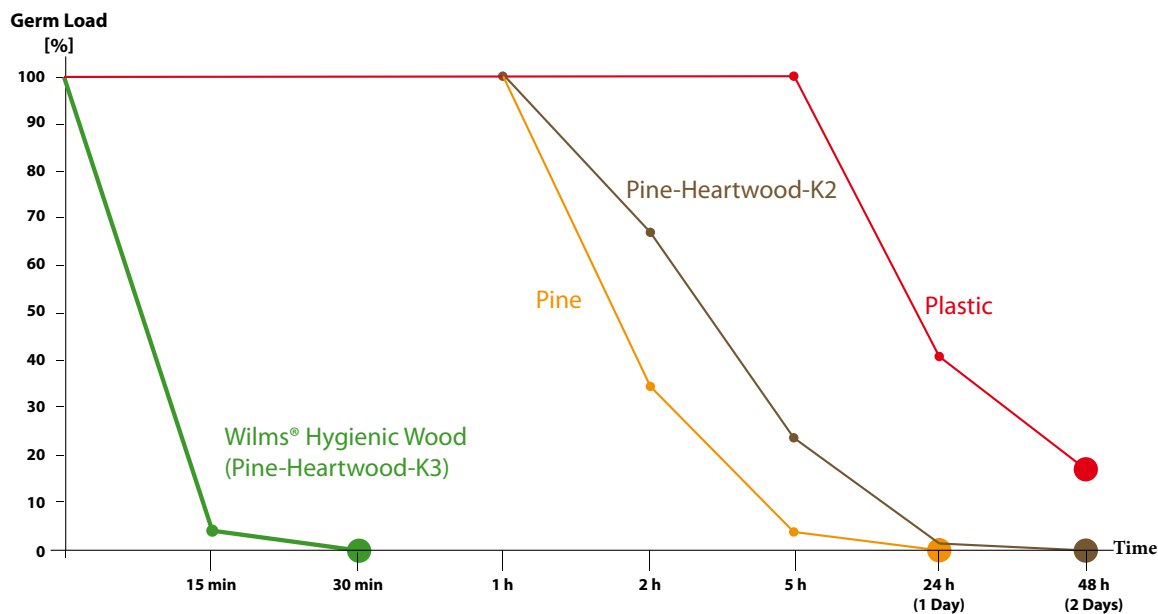


Objectives

Is it possible the hygienic properties of pine heartwood can be increased?

Approach

Samples of pine heartwood were processed differently and then each 1×10^6 cfu / cm² (total number of bacteria live per sq. cm) were infected E.coli bacterium. The development of bacterial populations was observed during a 48 hour period and is shown in the following diagram.



*Germ load on Wilms® Hygienic Wood, Pine-Heartwood-K2, Pine und Plastic **

Result

After a washing and drying procedure „K3“ the pine heartwood killed germs far faster than the other wood. This method improves the hygroscopic properties of the wood so that the wood is able to absorb liquids much faster. Test organisms that are located in the liquids are therefore more in contact with the contents of the wood. This patented procedure (EP-Nr. 1005964) is used for Wilms® Hygienic Wood.

Conclusion

The Wilms® patented washing and drying procedure greatly improved the hygienic properties of pine heartwood.



Implementation

Annett Schönwälder, Biologische Bundesanstalt für Land- und Forstwirtschaft, Institut für Pflanzenvirologie, Mikrobiologie und biologische Sicherheit, Messeweg 11/12, 38104 Braunschweig, 2000.

* Data: Schönwälder, Annett (2000), S. 51; Graphical composition: Fa. Wilms GmbH

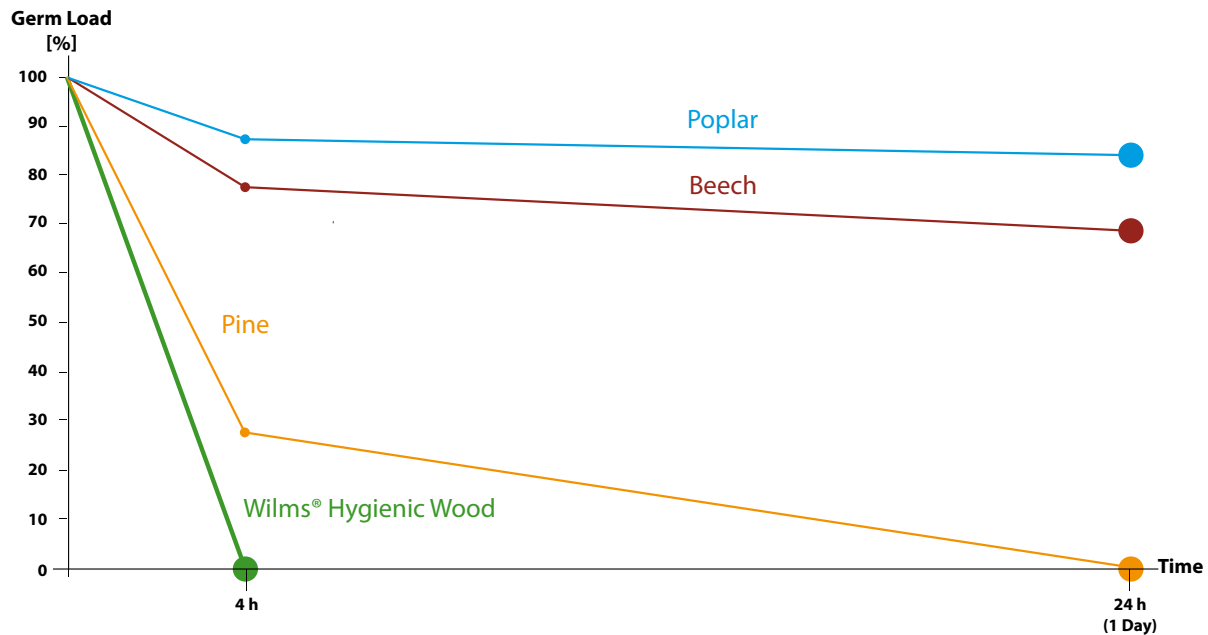


Objectives

Can germs live inside of the wood or will they be reduced/eliminated?

Approach

The test materials were 1×10^6 cfu / cm² (total number of bacteria live per sq. cm) wood infected with the E.coli bacterium. The development of bacterial populations was tested 1mm deep after 4 and also 24 hours. The results are shown in the following diagram.



Germ load inside the wood*

Result

When tested after four hours, the Wilms® Hygienic Wood had no germs left.

Conclusion

Bacteria is soaked into the Wilms® Hygienic Wood, where it is actively fought and killed.



Implementation

Annett Schönwälder, Biologische Bundesanstalt für Land- und Forstwirtschaft, Institut für Pflanzenvirologie, Mikrobiologie und biologische Sicherheit, Messeweg 11/12, 38104 Braunschweig, 2001.

* Data: Schönwälder, Annett (2001), S. 62; Graphical composition: Fa. Wilms GmbH



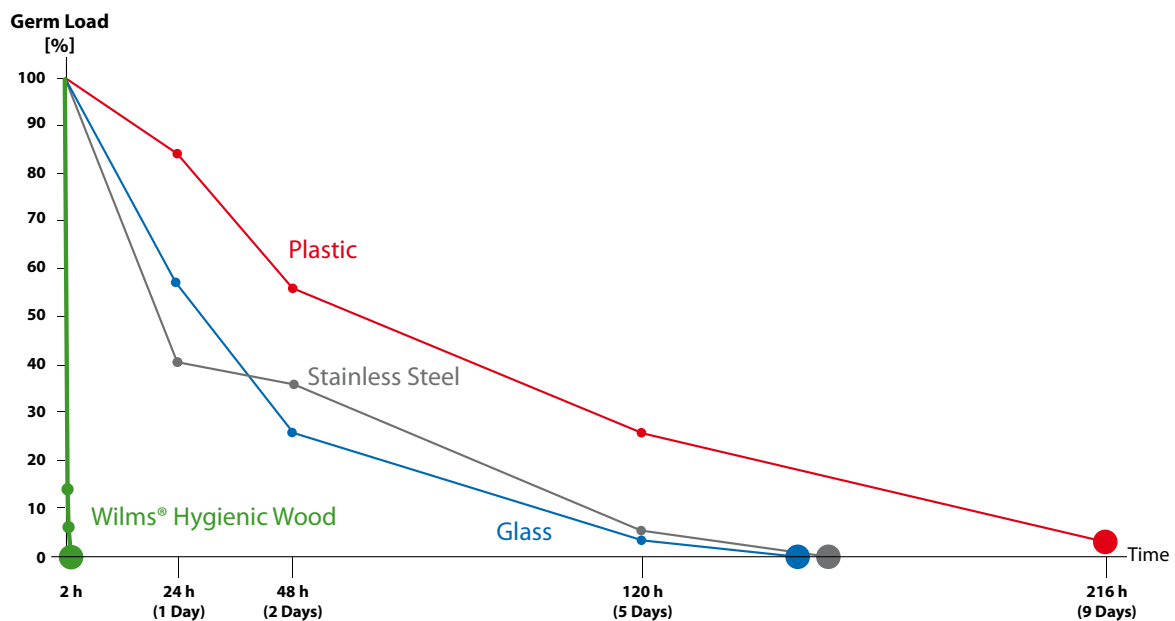
1.2 Germ reduction by Wilms® Hygienic Wood compared to other materials

Objectives

What are the antibacterial properties of Wilms® Hygienic Wood compared to other materials such as glass, stainless steel and plastic?

Approach

The test materials were each infected with 1×10^6 cfu / cm² (total number of bacteria live per sq. cm) of the E.coli bacterium. The development of bacterial populations was over a period of nine days, and is seen in the following chart.



Germ load on Wilms® Hygienic Wood, glass, stainless steel and plastic *

Result

Particularly significant is the rapid destruction (2 hours) of all micro-organisms by Wilms® Hygienic Wood, while the other materials still had bacteria after 120 hours (polyethylene after 216 hours).

Conclusion

On Wilms® Hygienic Wood bacteria are reduced significantly faster than on glass, stainless steel and plastic.



Implementation

Annett Schönwälder, Biologische Bundesanstalt für Land- und Forstwirtschaft, Institut für Pflanzenvirologie, Mikrobiologie und biologische Sicherheit, Messeweg 11/12, 38104 Braunschweig, 2001.

* Data: Schönwälder, Annett (2001), S. 66; Graphical composition: Fa. Wilms GmbH



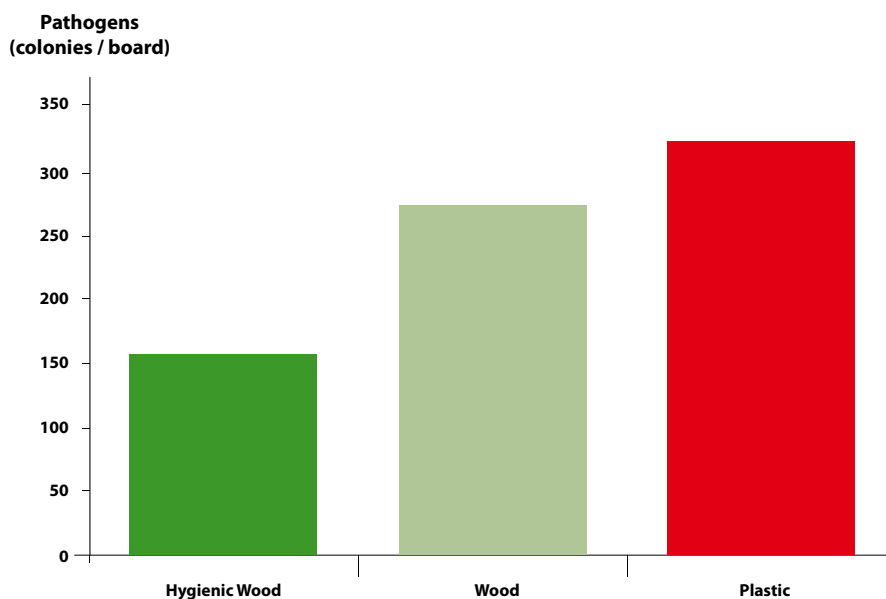
1.3 Hygienic Wood Pallets in the Food Industry

Objective

To determine the microbial quality of wooden and plastic surfaces under operational conditions in the food industry. The study was funded by the Lower Saxony Ministry for Economics, Technology and Transport.

Procedure

500 pallets – made of Hygienic Wood, traditional wood and plastic – were used over a six month period in 14 food establishments. They were used as a transportation tool and their hygienic condition was regularly reviewed. Overall, throughout the experimental period, 15,000 samples were taken. Test germs were: *Staphylococcus aureus* (methicillin-resistant), *Enterococcus faecium* (vancomycin-resistant), *Escherichia coli* (multi-resistant), *Pseudomonas aeruginosa* (multi-resistant), *Candida albicans*, *Mykobacterium terrae* and *Penicillium camembertii*.



*Bacteria level on various surfaces. **

Results

The research shows that there is significantly lower growth of microorganisms on Hygienic Wood pallets as compared to the surfaces of the commercially available wood and plastic pallets measured.

Wilms Hygienic Wood, under the same experimental conditions, always had fewer pathogens than the materials made of plastic or plastic-coated surfaces.

Conclusion

This study shows that the use of Hygienic Wood in the food industry is harmless if not beneficial. Hygienic Wood is naturally antibacterial and can eliminate dangerous pathogens faster than conventional materials. Food regulations have now been amended accordingly: Wood is re-authorized for the food industry.

Implementation



German Institute of Food Technologies,
Professor-von-Klitzing-Str. 7, 49610 Quakenbrück, 2001.

* Data: Steinkamp, Heinz (2001): *Investigations on the introduction of Hygienic Wood pallets for use in the food industry*, P. 11, Graphic Composition: Wilms GmbH



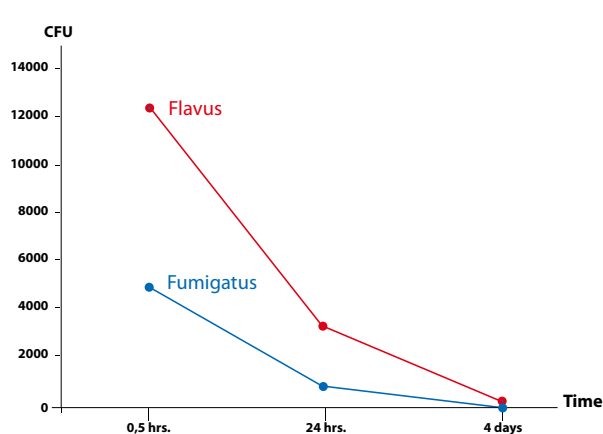
1.4 Wilms® Hygienic Wood - Useful against Aspergillosis?

Objective

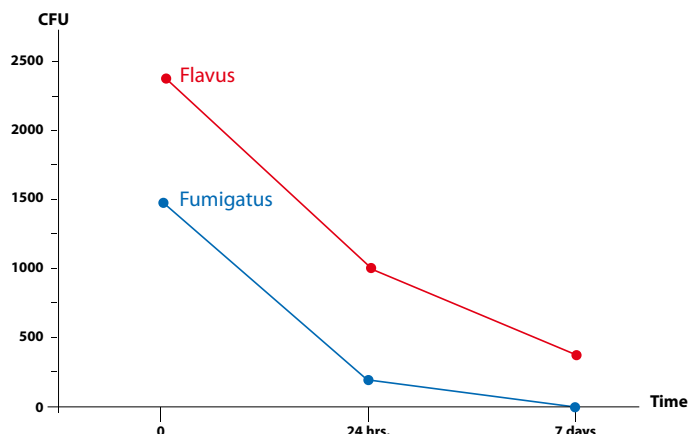
Are Hygienic Wood and Hygienic Wood mats able to reduce the mold organism *Aspergillus fumigatus* (responsible for more than 90% of life threatening cases of aspergillosis) and *Aspergillus flavus*?

Procedure

This study sought to determine the survival of fungal organisms on a flat Hygienic Wood surface as well as on Hygienic Wood chip mats. Samples were taken for measurement at specific time intervals and the germ populations were documented.



Fungi reduction on Hygienic Wood chip mats*



Fungi reduction on flat Hygienic Wood surfaces*

Results

After half an hour, the mold organisms *Aspergillus fumigatus* and *Aspergillus flavus* were already reduced by almost 50%. On both the flat Hygienic Wood surface as well as on the Hygienic Wood chip mats, it took four days to reduce the fungus by 90%.

Conclusion

The results show that Wilms Hygienic Wood provides a hygienic living environment which is almost completely free of *Aspergillus fumigatus* and *Aspergillus flavus*. This ensures a significant reduction in the risk of people, especially those with compromised immune systems, contracting aspergillosis disease.

Implementation



German Institute of Food Technology,
Professor-von-Klitzing-Str. 7, 49610 Quakenbrück, 2009.

* Data: Dr. rer. Nat. M. Timke (Dipl. biologist) (2009); Graphic Composition: Fa Wilms GmbH



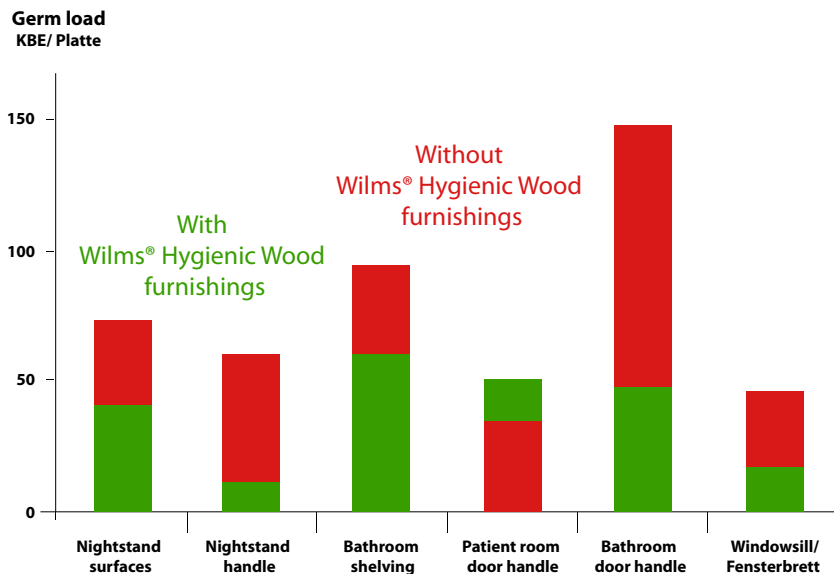
1.5 Patient rooms equipped with wooden furnishings

Objective

To evaluate how well the use of Hygienic Wood in hospital rooms reduces germs.

Procedure

The antimicrobial effect of pine heartwood against typical nosocomial bacteria is investigated. Based on the RODAC-imitation procedure, germ-reduction on pine heartwood was compared with that of plastic surfaces – both after being disinfected and without disinfection.



Comparison of Ppatient rooms with and without wood furnishings *

Results

Without application of disinfectants, significantly fewer germs were present on the two pine species than on the plastic surfaces. When disinfected, there was no significant germ growth except in regard to Sirafan which showed some germ growth, presumably from the interaction of the disinfectant with the ingredients of the wood.

In summary, the study shows the antimicrobial effect of pine heartwood on germs present in a hospital except in regard to Sirafan.

Conclusion

Based on the results of the study, pine heartwood has a positive effect against germs in hospital rooms (Prof. Dr. med Franz Daschner - Institute for Environmental Medicine and Hospital Hygiene).

Implementation

Franz Daschner, Institute for Environmental Medicine and Hospital Epidemiology, Institute for Plant Virology, Microbiology and Biosafety, Messeweg 11/12, 38104 Braunschweig, 2003.



* Data: Daschner, Franz (2003): Comparative one bakteriologische investigations in patient rooms with and without wood equipment and results and questionnaire action with patients and personnel, S. 28; Graphic compilation: Fa. Wilms GmbH



1.6 Influence of Wilms® Hygienic Wood bedding material on the health of broiler chickens

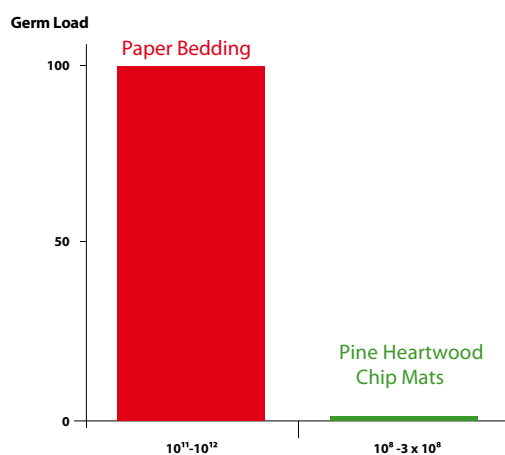
Objective

To what extent can Wilms® Hygienic Wood bedding impact the chickens' health?

Procedure

Compare pine heartwood mats to common paper bedding materials used for raising chickens. The paper bedding and pine heartwood mats were used in separate cages with 25 adult broiler chickens each. After one day, the TH Hannover Aussenstelle Bakum examined the chickens.

The investigation was carried out at a chicken-breeding farm in Wall Horst-Lechtingen, Germany.



Comparison of totals *

Results

The bedding made of pine heartwood has more than two powers of ten less bacteria than the bedding made of the conventional paper bedding.

Conclusion

Using Wilms® pine heartwood for bedding and for surfaces where the animals walk, makes a significant impact on the health of the animals. Besides the reduction of bacteria, fungi and mites, the wood influences the environment of the pet stalls in a positively by absorbing moisture and eliminating odor. Due to the considerably improved health of the animals, they often need less medication.



Implementation

German Institute for Lebensmitteltechnik,
Professor-von-Klitzing-Str. 7, 49610 Quakenbrück, 2003..

* Data: German Institute for Lebensmitteltechnik (2003): Research project, Influence of Wilms® Hygienic Wood bedding material on the health of broiler chickens; Graphical composition: Fa. Wilms GmbH



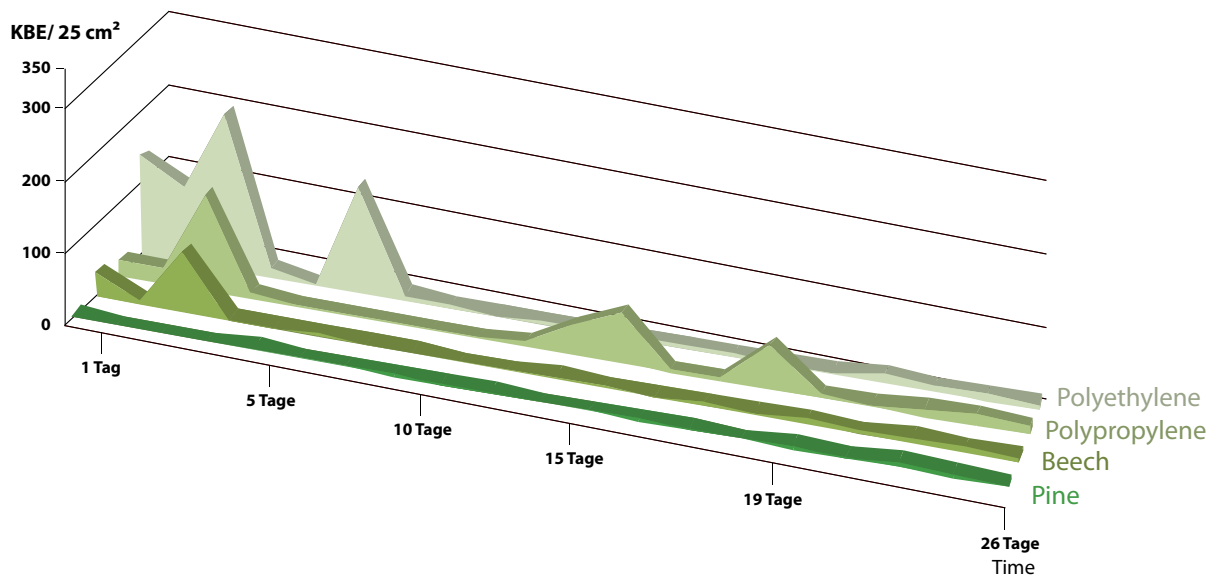
1.7 Wood and Hygiene - A Contradiction?

Objective

Is the use of wooden cutting boards hygienic?

Procedure

An experiment was conducted using two boards made of wood – pine and beech, and two boards made of commercial plastics - polyethylene and polypropylene. Over a period of one month, the boards were regularly used under normal conditions and were washed both by hand and in the dishwasher.



*Germ load on the boards that were washed in the dishwasher.**

Results

Post-contamination in both of the wood boards as well as the plastic boards was low. Results were somewhat better when the boards had been washed by hand. The pine cutting board showed the best results, followed by the beech wood and then the two types of plastic. Even new, dry wood boards yielded better results than the plastic boards.



Implementation

Dipl.-Ing. Dominique Boursillon,
 Prof. Dr. Volker Riethmüller,
 Albstadt-Sigmaringen University,
 Department of Life Sciences - Food Microbiology and Hygiene,
 Anton-Günther-Straße 51, 72488 Sigmaringen, 2005.

* Data: Boursillon, Dominique; Riethmüller, Volker (2005): The use of gumption boards from wood is hygienically safe, S. 16; Graphic compilation: Fa. Wilms GmbH



1.8 Investigation: Shopping Carts

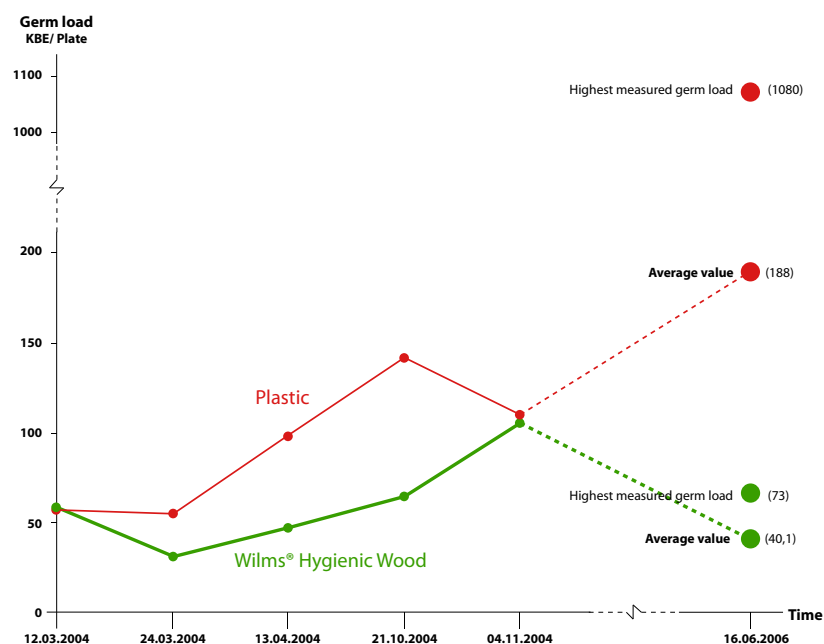
Objective

Compare the amount of pathogens on grocery cart handles made of Wilms® Hygienic Wood to those made of plastic.

Procedure

In this study, the microbial load on shopping cart handles made of Wilms® Hygienic Wood and conventional plastic was investigated. Conducted in Melle-Buer, Germany, the study compared a group of shopping carts at a local supermarket that had been fitted with Wilms® Hygienic Wood handles to the normal carts with plastic handles.

The study was conducted between 8:00 a.m. and 11:00 a.m. Carts were tested directly after use and also after longer periods of inactivity. The first samples were taken in March of 2003 and the last samples in June of 2006. The samples were evaluated by the „German Institute of Food Technology“.



Germ load on handles of shopping carts - plastic and Wilms® Hygienic Wood (Ep Patent #1005964)*

Results

Hygienic Wood handles are less heavily populated with germs than plastic handles. Even after three years of use, the Wilms® Hygienic Wood handles resist germs far better than plastic handles.

Another factor besides the material was the weather. The weather influenced the growth of germs.

Wet Weather: higher microbial load on plastic, lower on Wilms® Hygienic Wood and vice versa.

Conclusion

Handles made of Wilms® Hygienic Wood have significantly fewer germs compared to conventional plastic handles. Wilms® Hygienic Wood considerably reduces the transfer of pathogens from person to person.

Implementation



German Institute of Food Technology,
Professor-von-Klitzing-Str. 7, 49610 Quakenbrück, 2003-2006.

* Data: German Institute of Food Technology (2003-2006): Comparative investigations of the bars from Wilms® Hygienic Wood and plastic at trolleys; Graphic compilation: Fa. Wilms GmbH



1.9 Foot Fungus-Prevention through Wilms® Hygienic Wood Bath Mats*

Objectives

To what extent can the Wilms® Hygienic Wood Bath Mats be used to measure foot fungus prevention?

Approach

The test materials were infected with 11 different types of foot fungi in a concentration of 1×10^4 cfu / ml (colony forming unit per ml), respectively. The development of fungi on the Wilms® Hygienic Wood Bath Mat was over a period of 6 hours.



Result

The investigations showed that, depending on the species, 90% to 99% of the applied fungal organisms were killed on the Wilms® Hygienic Wood Bath Mat.

Conclusion

Wilms® Hygienic Wood is an effective measure to stop the spread of foot fungal pathogens in private and public institutions.



Implementation

U. Weber, Hygiene Nord GmbH, c/o BioTechnikum,
W.-Rathenau-Str. 49 a, 17489 Greifswald, 2005.

* Data: Weber, Ulrike (2005): K3 – Hygiene – Holz (Spänematten)



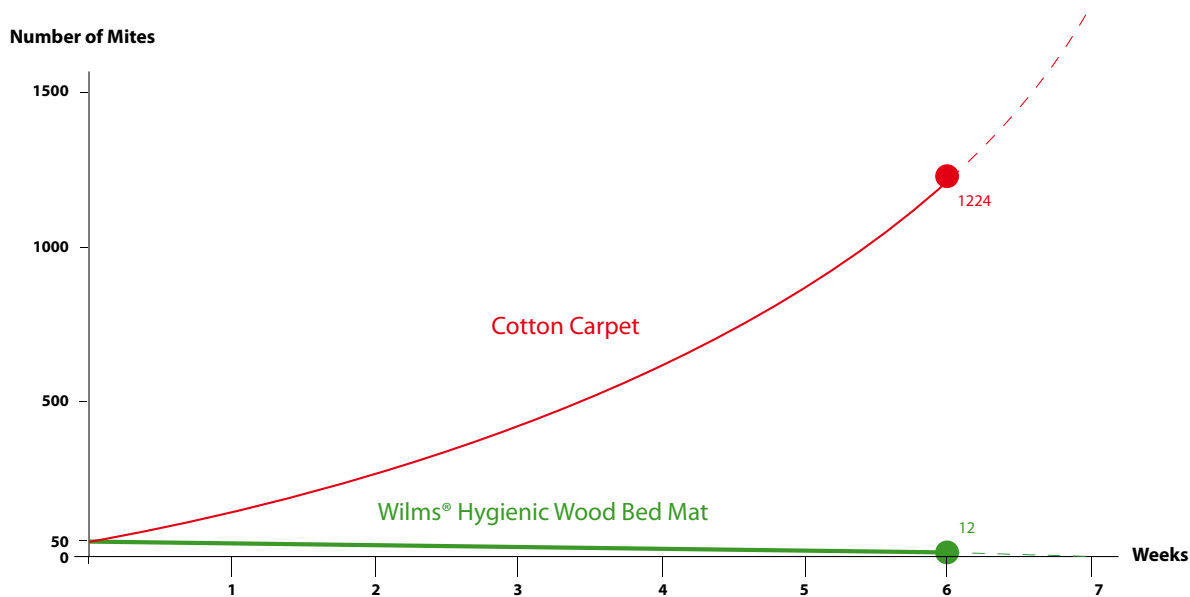
1.10 Protection against mites as an end effect of two types of Wilms® Hygienic Wood Bed Mats

Objectives

Do Wilms® Hygienic Wood Mats have an effect on mites and are they also suitable for people with allergies?

Approach

Two 10 x 10 cm samples - ■ a Wilms® Hygienic Wood Bed Mat and ■ a piece of cotton carpet - had 25 pairs of mites applied to them. The samples were then isolated in containers so that no mites were able to escape. Over a period of about 6 weeks, the samples were in varying temperatures and humidity, and the mites were then counted.



*Development of the mite population on a Wilms® Bed Mat and carpet**

Result

The Wilms® Hygienic Wood Bed Mat reduced the number of mites greatly in comparison to the carpet sample. The Wilms® sample had 98.9% less mites than the carpet sample.

Conclusion

Wilms® Hygienic Wood Bed Mats act strongly against mites and are therefore ideal for allergy sufferers.



**INSECT
SERVICES**

Implementation

Dr. Hans Dautel und Dr. Cornelia Dippel, IS Insect Services GmbH,
Haderslebener Str. 9, 12163 Berlin, 2005.

* Data: Dautel, Hans; Dippel, Cornelia (2005): Untersuchung der milbenabwehrenden Wirkung zweier Typen von Holzspänematten auf Hausstaubmilben, S. 7; Graphical composition: Fa. Wilms GmbH



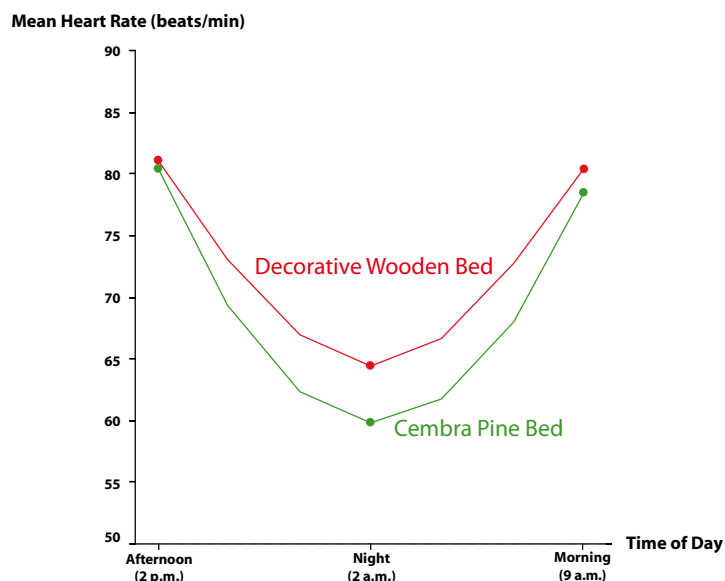
1.11 Influence of Cembra Pine on quality of sleep and relaxation

Objectives

Is there an improvement of sleep quality when Cembra Pine beds are slept in compared to similarly decorated beds made of different wood?

Approach

Fifteen healthy adult volunteers spent a period of 3-4 weeks sleeping in a Cembra Pine bed or another type of wooden bed. Throughout this time, long-term ECG measurements were made to record everyday stress and recovery operations of the body.



Heart rate during sleep in a Cembra Pine bed*

Result

The positive influence of pine wood on humans was shown on both physiological and psychological levels. When sleeping in a cembra pine bed, a significantly lower heart rate occurred. During the first sleep cycle, sleep is usually the deepest. When in a cembra pine bed, subjects remained in this period longer. Also during the day the positive impact of the cembra bed was shown by participants.

The heart beats up to 3,500 times less, which equals on hour of daily cardiovascular work.

Conclusion

Sleeping in a cembra pine bed leads to better quality of life.



Implementation

Univ. Prof. Dr. Maximilian Moser, JOANNEUM RESEARCH, Institut für nichtinvasive Diagnostik, Franz-Pichler-Str. 30, A-8160 Weiz, Gefördert von der Europäischen Union, 2002.

* Data: Moser, Maximilian (2002) : Evaluation der Auswirkungen eines Zirbenholzumfeldes auf Kreislauf, Schlaf, Befinden und vegetative Regulation, S. 38; Graphical composition: Fa. Wilms GmbH



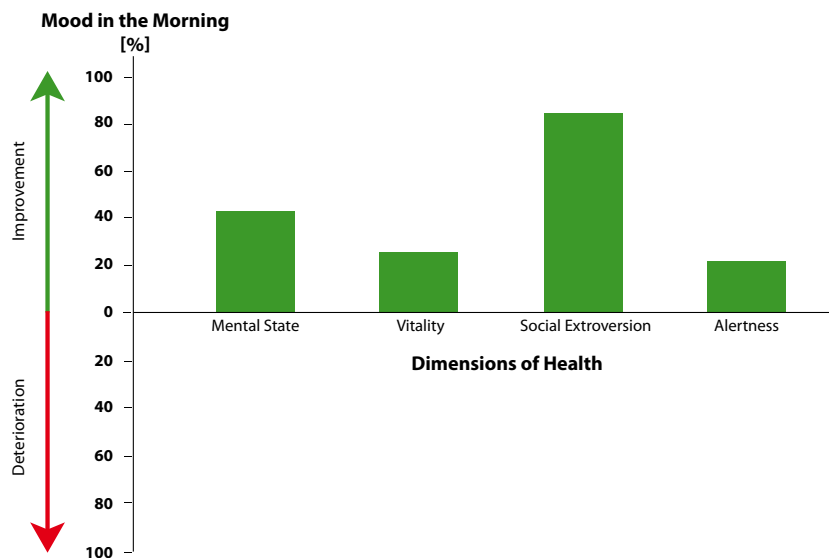
1.12 Influence of a pine heartwood constructed room on people in an everyday living situation

Objectives

Can the pine wood show positive characteristics on the human body in a scientific analysis?

Approach

Thirty volunteers experienced normal levels of daily stress and relaxation. Half of the group occupied a room made of raw pine wood while the other 15 were in identical rooms made of other types of wood.



*Morning mood in the cembra pine room**

Result

There were significant differences in the quality of recovery between the two groups. The material of the room had a significant influence on the stress and relaxation ability of the people. The volunteers from the room made of pine heartwood showed a lower heart rate in physical and mental stress situations and subsequent periods of inactivity, and an accelerated vegetative recovery process and increased social extroversion.

Conclusion

Since the Wilms® Hygienic Wood Bed Mats are also made of cembra pine wood, the positive effects on the human body are obvious even without the transformation of the entire room.



Implementation

Univ. Prof. Dr. Maximilian Moser, JOANNEUM RESEARCH, Institut für nichtinvasive Diagnostik,
Franz-Pichler-Str. 30, A-8160 Weiz, Gefördert von der Europäischen Union, 2002.

* Data: Moser, Maximilian (2002): Evaluation der Auswirkungen eines Zirbenholzumfeldes auf Kreislauf, Schlaf, Befinden und vegetative Regulation, S. 42; Graphical composition: Fa. Wilms GmbH



1.13 Pine heartwood against the flu?*

Objective

Is the pine heartwood extract effective against the influenza A virus?

Procedure

In This study investigated the effect of the pine heartwood extract on the replication of influenza viruses. In particular, the effect on the human virus isolate A/Puerto-Rico/8/34 (PR8) and the highly pathogenic avian bird influenza virus A/virus/Bratislava/79 (FPV) in different host cells, specifically in dog kidney epithelial cells (Madin-Darby canine kidney cells (MDCK)) as well as A549 lung epithelial cells in vitro.



Results

It was shown that the Virustiter infectious PR8 after an incubation of the infected MDCK cells with a non-cytotoxic concentrations of the extract 25% (v / v) compared to untreated cells to 100% **and the Virustiter of infectious FPV to 90% has been reduced.**

Conclusion

The antiviral effect of the pine extract or purified compounds could possibly be a therapy against drug-resistant influenza viruses and provide an alternative for flu patients.

Implementation



Prof. Dr. rer. nat. Stephan Ludwig,
Institute for Molecular Virology,
Center for Molecular Biology of Inflammation (ZMBE)
Von-Esmarch-Str. 56, D-48149 Münster, 2006.

* Data: Institute for Molecular Virology (2006): Investigation on assignments project, Investigation of aqueous excerpts from Pine heartwood and their effect on increase of influenza A viruses



1.14 Effectiveness and tolerability of PineVital Liquid Care as a skincare product*

Objectives

Does Wilms® Pine Gold have a positive effect on stressed skin?

Approach

Wilms® PineVital Liquid Care was used over a period of three weeks by 13 subjects with either red, dry, fissured, eroded, or scaling skin on their hands. Other normal skincare practices by the participants was allowed. Three times a day PineVital Liquid Care was applied.



Result

Skin moisture improved significantly in subjects and they reported a decline in skin redness. It showed an improvement in skin barrier function.

Even skin symptoms such as dryness, tension and skin cracks showed significant improvements.

Conclusion

...In my view, the results are very promising...

Prof. Dr. M. Jünger, Direktor der Klinik



Implementation

Prof. Dr. Michael Jünger,
Klinik und Poliklinik für Hautkrankheiten der Ernst-Moritz-Arndt-Universität,
Fleischmannstr. 42/44, 17489 Greifswald, 2006.

* Data: Jünger, Michael (2005): Clinical efficacy and tolerability test of the pine heartwood extract of Company Wilms as a skin care and stabilization product with healthy test persons and those with a history of atopy.



1.15 Effectiveness of PineVital Liquid Care against the Herpes Simplex Virus Type 1*

Objectives

Is Wilms® PineVital Liquid Care effective against Herpes viruses?

Approach

The pine heartwood extract was diluted and combined with the HSV-type 1 virus. After 24 hours the samples were evaluated.



Result

The pine heartwood liquid extract has disinfectant effects. Maximum effectiveness is reached in an incubation period of one hour. Interestingly, there was a significant effect when anti-herpes viraler incubation temperatures of 37 ° C were observed.

Conclusion

The results of this study show a very strong and inhibiting effect of the pine ingredients on the herpes virus.



Implementation

Prof. Dr. med. Joachim Kühn,
Institute for Medical Microbiology - Clinical Virology, Universitätsklinikum Münster,
Von Stauffenberg-Straße 36, 48151 Münster, 2006

* Data: Kühn, Joachim(2006) : Study of the efficacy of watery pine heartwood extract for Herpes Simplex-Virus Type 1.



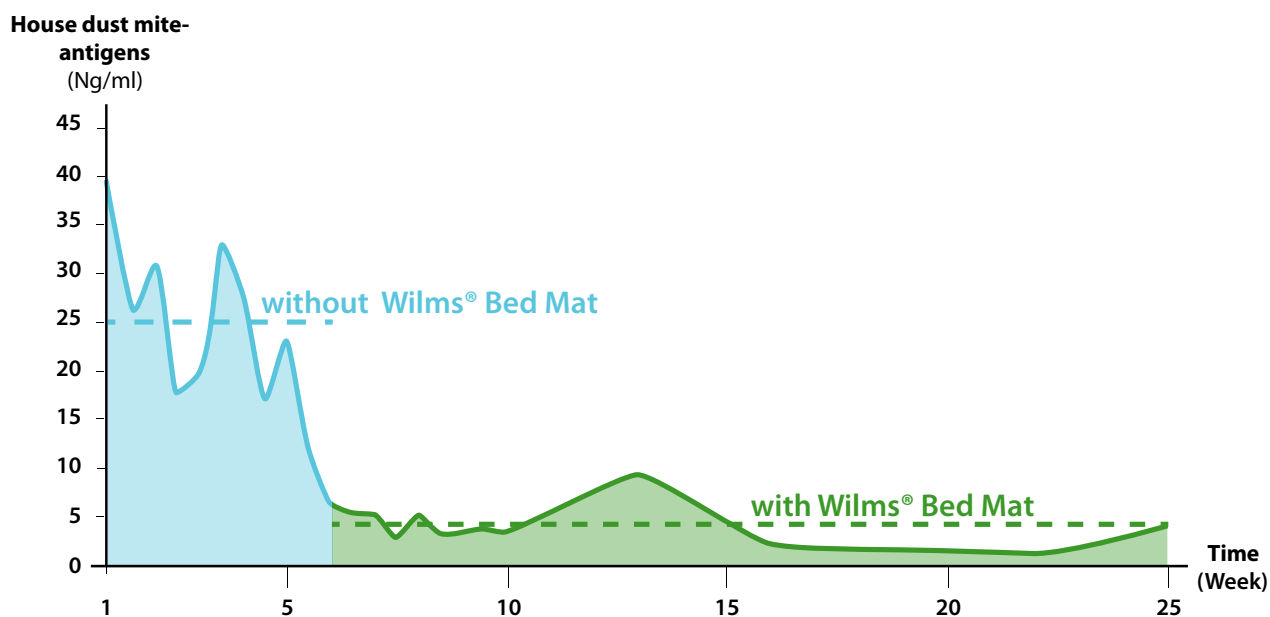
1.16 Alleviation of allergies through the use of HygienicWood Bed Mat?

Objective

Based on the results of a former study conducted by "Insect Services" the present study, designed as practical test, investigated to what extent the Hygienic Wood Bed Mat leads to a reduction of mite populations in beds and an improved well-being of allergy sufferers.

Approach

32 people suffering from dust mite allergy attended the study for 6 months in order to investigate the impact of the Bed Mat on mite population, allergy symptoms and well-being. The participants had to rate their quality of life with respect to their allergy at the beginning and at the end of the test period. For the determination of the real mite population dust samples were taken from the beds on a regular basis: within the first 10 weeks without, for the following 14 weeks with Bed Mat.



Study: 32 allergy sufferers | 6 months trial period*

Results

The HygienicWood Bed Mat reduced the mite population by over 80% within 14 weeks. Allergy symptoms like "blocked nose", "running nose", "urge to sneeze" and "reddened eyes" decreased in 80% of all cases.

Referring to the well-being more than 80% of the participants felt a noticeable improvement. Two-third of the participants quoted a reduction respectively significant reduction of discomfort within the last two months.

Conclusion

The HygienicWood Bed Mat is an effective opportunity to reduce the mite population in bed. This leads to a distinct reduction of allergy symptoms and to a significant increase of well-being without using any chemicals or extensive cleaning of bed textiles.

Implementation



Torsten Koburger, Deike Pitts,
Hygiene Nord GmbH, c/o BioTechnikum,
W.-Rathenau-Str. 49 a, 17489 Greifswald,
2010.



Prof. Dr. med. Axel Kramer,
Institute of Hygiene and Environmental Medicine,
Ernst-Moritz-Arndt-University Greifswald,
Walter-Rathenau-Straße 49 A,
17489 Greifswald, 2010

* Data: T. Koburger, D. Pitts, Prof. Dr. med. A. Kramer (Dipl. Biologist) (2010): Results of a field study to the influence of hygiene wood mattress editions on the mite load in bed deaf and on the state of health of persons with house dust mite allergy,
Graphical composition : Fa. Wilms GmbH



2. European Patents



1. Wooden panel parts with even surface - EP - Patent Nr. 1005964.



Cutting Board



Cutting Tablet



Desk Cover



Pen Set

2. Wood particle laminated material - EP - Patent Nr. 1023086.



Bed Mat



Bath Mat



Universal Mat

3. Stable floor covering - EP - Patent Nr. 1078569 B1.



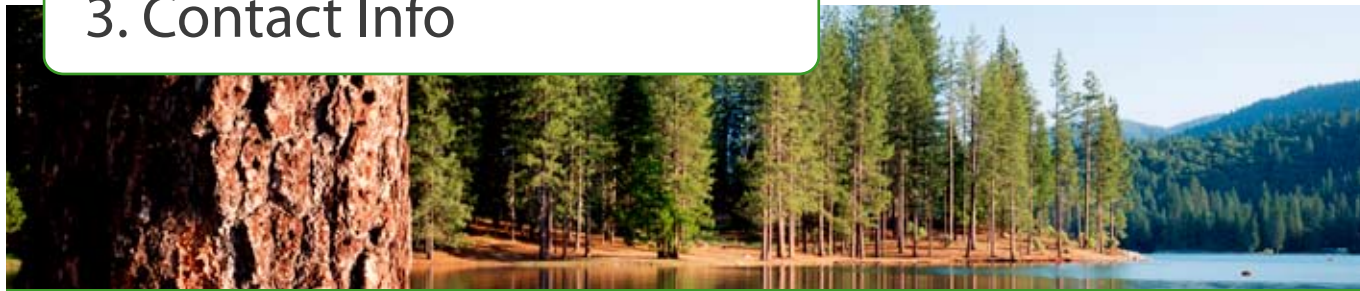
Stable for small animals



4. Air disinfection device - DE - Patent Nr. P 4413400.



3. Contact Info



For more information, please contact us.

Marion Zander

Project Manager

Tel. +49 5427 / 9225 – 214 Fax - 143

m.zander@wilms.com

Jens Boesmann

Product Manager and Sales

Tel. +49 5427 / 9225 – 142 Fax - 143

j.boesmann@wilms.com

Heinrich Wilms

Owner/Manager

Tel. +49 5427 / 9423- 20 Fax - 23

h.wilms@wilms.com



Come visit us in our show room/sales center in Melle-Buer, Am Nordring 14.

Our address is:

Wilms GmbH – HygieneHolz

Im Glanetal 6

49152 Bad Essen - Barkhausen

www.wilms.com

info@wilms.com

Orders

MAIL

Wilms GmbH | HygieneHolz

Im Glanetal 6, 49152 Bad Essen-Barkhausen

FAX

+49 5427 / 9225 – 143

TELEPHONE

+49 5427 / 9225 – 0

PER E-MAIL

hygiene@wilms.com



Nature and knowledge combined.