HEIQ VIVOTECH

Cleaning with probiotics

The power of microorganisms

www.heiq.com

Differentiate.
Innovate.

Our story

After a week of hiking in the Swiss Alps in 2005, our companions began to keep a distance.

It led to a revelation: use science to solve everyday problems, like smelly shirts from a long hike.

Our driving force

Use co-creation to infuse everyday products with transformative qualities, making them functional, sustainable, and revolutionary

HEIQ

[’ haɪkju]

Hike

High Quality Materials

IQ **Intelligent** Materials

Dr. Murray Height
Co-founder
& Chief Innovation Officer

Carlo Centonze
Co-founder & CEO

HeiQ Chrisal – 30 years of biotech

Industrial biotech company Chrisal was founded in 1989 in Lommel, Belgium

In March 2021, HeiQ Group acquired Chrisal

HeiQ Chrisal **pioneers products based on synbiotic ingredients** (patented combination of pre- and probiotics), with a mission to render our world **more sustainable** and **less polluted by harmful chemicals**

ISO certified production:
- Lommel, Belgium
- Concord, NC, USA

R&D laboratory, sales:
- Lommel, Belgium
- Schlieren, Switzerland
- Concord, NC, USA

Unbeatable confidence

HeiQ Chrisal synbiotics (pro/prebiotics) meet applicable criteria:

.01 **15 years of safe use in hospitals and clinical studies,** no reported safety concerns

.02 **Biosafety Level (BSL) 1**, not considered pathogenic

.03 **100% natural**, not genetically modified (non-GMO)

.04 **EU Ecolabel certified** (SYNBIO products)

.05 Readily **biodegradable**, degradation products considered safe for fauna and flora

.06 Meet the criteria for use in **cosmetics** (listed in INCI)

.07 **Food safe** according to the American FDA (GRAS status)

.08 On the list of **safe ingredients** of the European Food Safety Agency (EFSA) for processing in food

.09 Passed official **OECD safety** tests

- OECD 403 Inhalation toxicity
- OECD 404 Acute skin irritation/corrosion
- OECD 405 Acute eye irritation/corrosion
- OECD 406 Skin sensation
- OECD 437 - Bovine corneal opacity & permeability (BCOP) test method for identifying ocular corrosives & severe irritants
- OECD 439 - In vitro skin irritation: Reconstructed human Epidermis (RhE) test method

ATCC®

EU Ecolabel www.ecolabel.eu

efsa

OECD
BETTER POLICIES FOR BETTER LIVES

What is the issue?

Classic cleaning products only work short-term

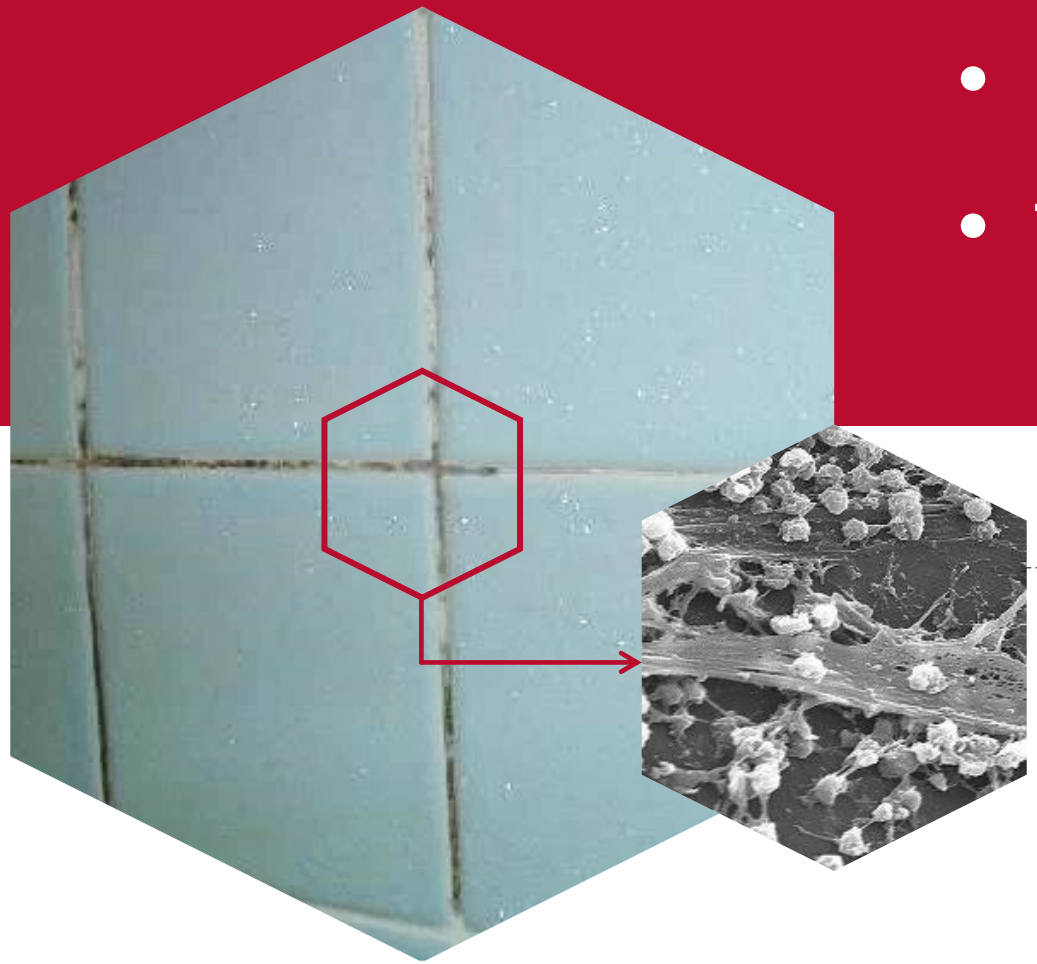
Working with conventional chemical cleaning products and disinfectants cleans surfaces well, but:

- ...it does not result in creating **a balanced microbiome**
- ...the more disinfectants we use, the more **resistant bacteria** we create
- **...difficult to clean in scratches** and **remove the grimy film** which is a shelter for organic dirt and source of bad smells
- **...frequent cleaning is needed** as it does not result in long-lasting cleanliness

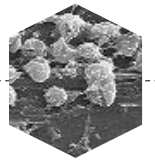
Strong tendency in the market towards

«green» cleaning

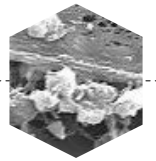
What is a biofilm?



- Universally present on surfaces
- Tenacious
- Shelter for microbes that create stains and bad smells



Micro-organisms
(bacteria, fungi, archaea, algae...)



Biofilm binding matrix
(exopolysaccharides, proteins...)

What is the solution?

HeiQ VivoTech – Cleaning with probiotics

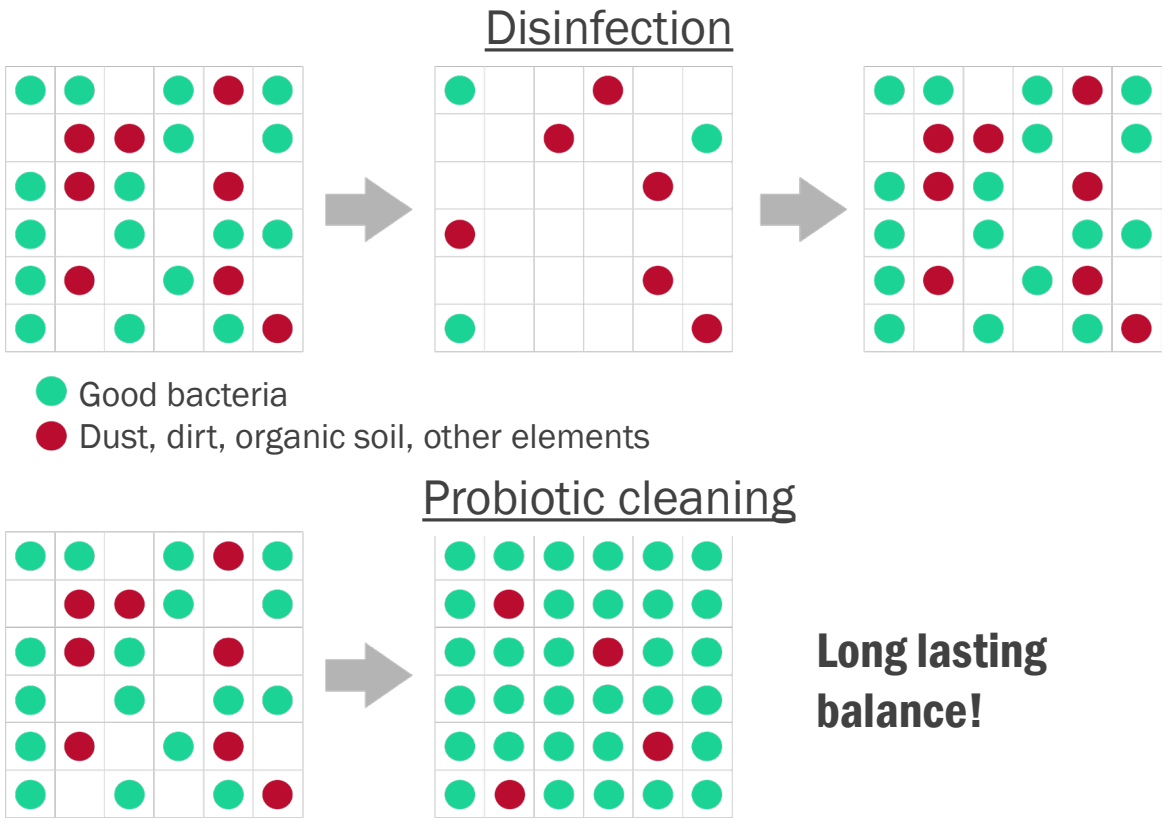
- Contains probiotics
- Strong cleaning effect
- Probiotics produce wide range of enzymes that digest various types of organic dirt
- Acts long-term
- Supports balanced microbiome
- Limited effect on microbiome diversity

Probiotic cleaning

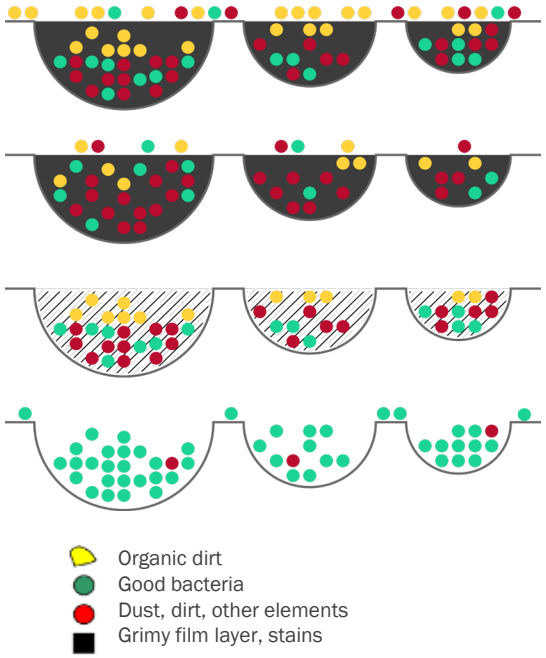
- Probiotics are **great help in cleaning**!
- Get into the finest cracks to **remove stubborn stains** and organic soil
- Active **odor prevention**
- Adds probiotics to the surfaces to maintain a **balanced microbiome**
- Provides **long-lasting cleanliness**

Probiotic cleaning works better & lasts longer!

Here's how cleaning with probiotics works:



How does probiotic cleaning work?



Before cleaning

DETERGENTS

DETERGENTS + ENZYMES

DETERGENTS + ENZYMES + PROBIOTICS

Traditional cleaning

Cleaning with probiotics

Dual action of the surfactants and the probiotic enzyme production ensure **deep cleaning efficiency**

Detoxes surfaces and breaks down dirt, stains and grime for days through continuous cleaning, microscopically purifying down to the deepest pores

Stubborn, deep pollution can take a few weeks to clean; but once gone, can keep gone with less

Probiotic cleaners: effective and sustainable

Killing microorganisms has harmful consequences for the microbiome:

- Resistant harmful germs
- Dangerous especially in hospitals

Research showed that probiotic cleaners clean better and works longer than harsh chemical cleaners:

- Probiotic cleaners consume organic soil, in addition to inanimate allergens caused by pollen, dust mite matter, and pets such as dander, hair, urine, and saliva on surfaces
- Sustainably sourced probiotic materials
- Several formulated products awarded with EU Ecolabel for cleaning agents, Cradle2Cradle Gold compatible
- No intentionally added
    - Chlorine bleach
    - Formaldehydes
    - Phosphates

Advantages of probiotic over conventional cleaning

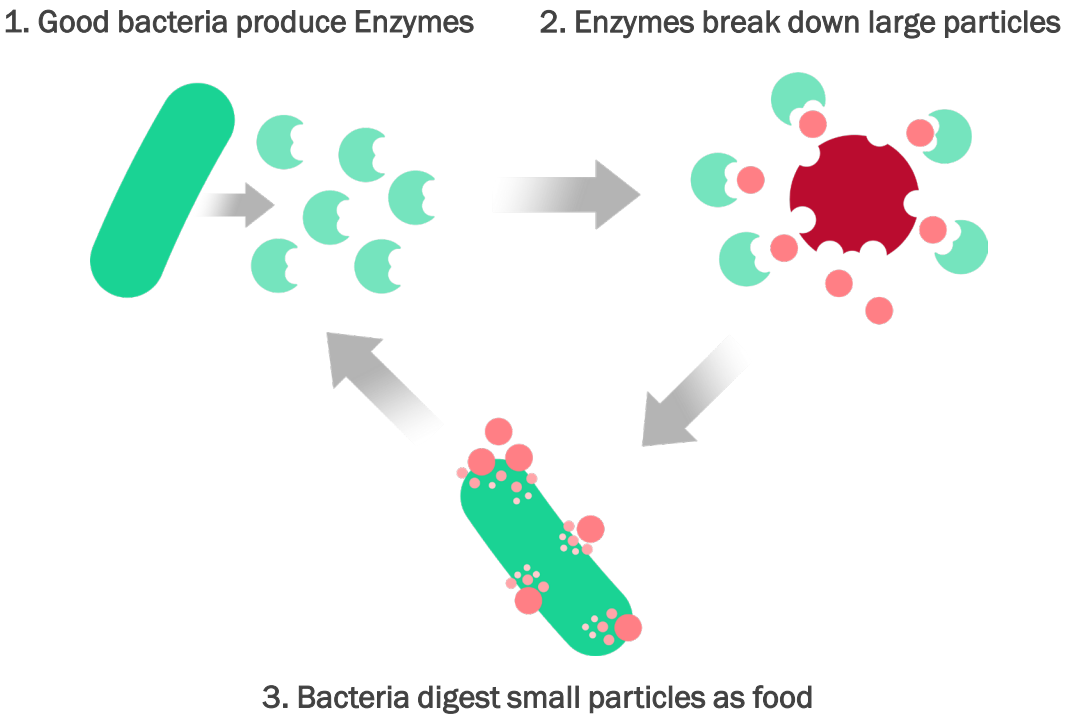
Conventional cleaners clean well, but **with HeiQ VivoTech Inside, products clean deeper with a longer-lasting effect**

.01 Probiotics are natural organisms

.02 HeiQ VivoTech colonializes the space with good bacteria

.03 Good bacteria will consume small particles and produce enzymes

.04 Creating a continuous cycle for cleaning and odor control well after application



Our probiotic products

HeiQ VivoTech Cleaning Spray

Probiotic ready-to-use all-purpose spray for cleaning all water-resistant surfaces

- Probiotics can break down stains and dirt, remove organic contaminants and clean even the smallest crevices and fine grooves
- Contributes to the balance of the surface microbiome
- Thanks to long-lasting action, probiotics can work for days
- Actively prevents odors, cleans joints thoroughly and keeps drains clear
- Spray on surface and clean off with a sponge or (microfiber) cloth
- pH-neutral, no CLP danger symbols
- 500ml spray bottle, pH neutral

WHITE LABEL OPPORTUNITY

HEIQ VIVOTECH INSIDE

HeiQ VivoTech Toilet Gel

Probiotic toilet cleaner for daily use

- Due to its gel form it sticks to the surface longer, making it more efficient
- Keeps drains clear and odor-free
- Reduces the risk of limescale and blockages
- The probiotics effectively break down and remove organic dirt
- Helps to create a balanced microflora
- No chlorine bleach, formaldehyde, phosphates, quats
- Minimum of 50 million probiotics/ml
- 750 ml bottle
- 2-year shelf-life

WHITE LABEL OPPORTUNITY

HEIQ VIVOTECH INSIDE

HeiQ VivoTech Deep Mist

Fogging room surfaces with probiotics to reduce smell and enhance efficiency & lifespan of AC systems

- 100% biological mode of action, biodegradable
- Works with most fogging devices
- The probiotics effectively break down and remove organic dirt
- Minimum of 50 million probiotics/ml
- No CLP danger symbols, pH neutral
- No chlorine bleach, formaldehyde, phosphates, quats
- 5L, 20L bottles/containers
- 3-year shelf-life

WHITE LABEL OPPORTUNITY

HEIQ VIVOTECH INSIDE

HeiQ VivoTech Interior Cleaner

Light foaming probiotic all-purpose cleaner for cleaning of furniture, doors, windowsills

- Concentrated product, to be diluted at 0.5 - 1%
- Applicable with sponge or (microfiber) cloth
- The probiotics effectively break down and remove organic dirt
- Help to create a balanced microflora
- Deep-clean joints and actively prevent odors
- The probiotics also keep drains clear and odor-free
- No CLP danger symbols, pH neutral
- No chlorine bleach, formaldehyde, phosphates, quats
- Minimum of 50 million probiotics/ml
- 1- and 5-liter bottles
- 3-year shelf-life

WHITE LABEL OPPORTUNITY

HEIQ VIVOTECH INSIDE

HeiQ VivoTech Sanitary Cleaner

Light foaming probiotic sanitary cleaner for cleaning of bathrooms and toilets

- Concentrated product, to be diluted at 0.5 - 1%
- Applicable with sponge or (microfibre) cloth
- The probiotics effectively break down and remove organic dirt
- Help to create a balanced microflora
- Deep-clean joints, actively prevent odors and prevent scale deposit
- The probiotics also keep drains clear and odor-free
- No CLP danger symbols, pH neutral
- No chlorine bleach, formaldehyde, phosphates, quats
- Minimum of 50 million probiotics/ml
- 1- and 5-liter bottles
- 3-year shelf-life

WHITE LABEL OPPORTUNITY

HEIQ VIVOTECH INSIDE

HeiQ VivoTech Floor Cleaner

Light foaming probiotic floor cleaner for manual cleaning of all water-resistant floors

- Concentrated product, to be diluted at 0.5 - 1%
- Applicable with mop, brush or broom
- The probiotics effectively break down and remove organic dirt
- Help to create a balanced microflora
- Deep-clean joints and actively prevent odors
- The probiotics also keep drains clear and odor-free
- No CLP danger symbols, pH neutral
- No chlorine bleach, formaldehyde, phosphates, quats
- Minimum of 50 million probiotics/ml
- 1- and 5-liter bottles
- 3-year shelf-life

WHITE LABEL OPPORTUNITY

HEIQ VIVOTECH INSIDE

HeiQ VivoTech Floor Scrub

Non foaming probiotic floor cleaner for mechanical cleaning of all water-resistant floors

- Concentrated product, to be diluted at 0.5 - 1%
- Applicable with floor scrubbing machines
- The probiotics effectively break down and remove organic dirt
- Help to create a balanced microflora
- Deep-clean joints and actively prevent odors
- The probiotics also keep drains clear and odor-free
- No CLP danger symbols, pH neutral
- No chlorine bleach, formaldehyde, phosphates, quats
- Minimum of 50 million probiotics/ml
- 1- and 5-liter bottles
- 3-year shelf-life!

WHITE LABEL OPPORTUNITY

HEIQ VIVOTECH INSIDE

HeiQ VivoTech Degreaser Pro

Light foaming probiotic cleaner for mechanical cleaning of oil and grease on water-resistant surfaces

- Concentrated product, to be diluted at 0.5 - 1%
- The probiotics effectively break down and remove hard-to-remove grease and oil
- Help to create a balanced microflora
- Deep-clean joints and actively prevent odors
- The probiotics also keep drains clear and odor-free
- No chlorine bleach, formaldehyde, phosphates, quats
- Minimum of 50 million probiotics/ml
- 1- and 5-liter bottles
- 3-year shelf-life

WHITE LABEL OPPORTUNITY

HEIQ VIVOTECH INSIDE

Certification & Studies

EU Ecolabel Certificate

The HeiQ VivoTech Ecolabel products combine an optimal efficiency with maximum sustainability!

Probiotics immediately become active and start degrading organic dirt in a 100% biological way.

Probiotics originate from soil and water, when they eventually end up in the wastewater, they will actively contribute to wastewater treatment and the maintaining of a natural microflora in the environment.

HeiQ VivoTech Ecolabel products are not only environmentally friendly – they are environment beneficial!

EU Ecolabel
www.ecolabel.eu

EU Ecolabel Certificate

The Belgian Competent Body has awarded the EU Ecolabel licence number BE/020/007 to:

HeiQ Chrisal nv

Producer of Hard surface cleaning products

See product specification in standard contract.

This contract is valid until 31-12-2026.

Brussels, 28th May 2024,

Desclée Madeleine
"Focal Point European Ecolabel"
Belgian Competent Body

EUROPEAN COMMISSION
Health Food Chain Safety Environment
environment

*Please check with HeiQ which product is Ecolabel certified.

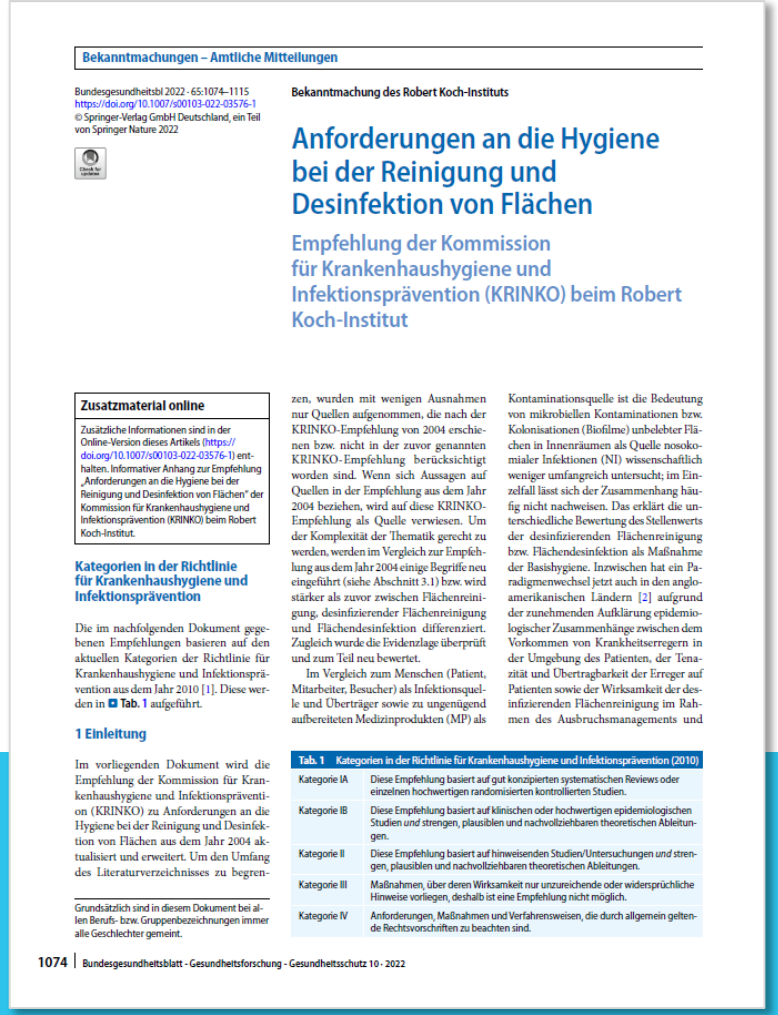
Hospital hygiene paradigm change

ROBERT KOCH INSTITUT

From 2022, the Robert Koch Institute (RKI) has included probiotic surface cleaning in its new official recommendations for hospital cleaning & hygiene in Germany

RKI is the German government's central institution for the identification, surveillance and prevention of infectious diseases and internationally renowned as hospital hygiene authority

"(...) Bacteria form a long-term stable microbiome, while the success of disinfection only lasts for a short time. Furthermore, disinfectants are known to stimulate the development of cross-resistance to antibiotics, which is not the case with probiotic cleaning products."



Bekanntmachungen – Amtliche Mitteilungen

Bundesgesundheitsbl 2022 · 65:1074–1115
https://doi.org/10.1007/s00103-022-03576-1

Bekanntmachung des Robert Koch-Instituts

Anforderungen an die Hygiene bei der Reinigung und Desinfektion von Flächen

Empfehlung der Kommission für Krankenhaushygiene und Infektionsprävention (KRINKO) beim Robert Koch-Institut

Zusatzmaterial online

Zusätzliche Informationen sind in der Online-Version dieses Artikels (https://doi.org/10.1007/s00103-022-03576-1) enthalten. Informativer Anhang zur Empfehlung „Anforderungen an die Hygiene bei der Reinigung und Desinfektion von Flächen" der Kommission für Krankenhaushygiene und Infektionsprävention (KRINKO) beim Robert Koch-Institut.

Kategorien in der Richtlinie für Krankenhaushygiene und Infektionsprävention

Die im nachfolgenden Dokument gegebenen Empfehlungen basieren auf den aktuellen Kategorien der Richtlinie für Krankenhaushygiene und Infektionsprävention aus dem Jahr 2010 [1]. Diese werden in Tab. 1 aufgeführt.

1 Einleitung

Im vorliegenden Dokument wird die Empfehlung der Kommission für Krankenhaushygiene und Infektionsprävention (KRINKO) zu Anforderungen an die Hygiene bei der Reinigung und Desinfektion von Flächen aus dem Jahr 2004 aktualisiert und erweitert. Um den Umfang des Literaturverzeichnisses zu begrenzen, wurden mit wenigen Ausnahmen nur Quellen aufgenommen, die nach der KRINKO-Empfehlung von 2004 erschienen bzw. nicht in der zuvor genannten KRINKO-Empfehlung berücksichtigt worden sind. Wenn sich Aussagen auf Quellen in der Empfehlung aus dem Jahr 2004 beziehen, wird auf diese KRINKO-Empfehlung als Quelle verwiesen. Um der Komplexität der Thematik gerecht zu werden, werden im Vergleich zur Empfehlung aus dem Jahr 2004 einige Begriffe neu eingeführt (siehe Abschnitt 3.1) bzw. wird stärker als zuvor zwischen Flächenreinigung, desinfizierender Flächenreinigung und Flächendesinfektion differenziert. Zugleich wurde die Evidenzlage überprüft und zum Teil neu bewertet.

Im Vergleich zum Menschen (Patient, Mitarbeiter, Besucher) als Infektionsquelle und Überträger sowie zu ungenügend aufbereiteten Medizinprodukten (MP) als Kontaminationsquelle ist die Bedeutung von mikrobiellen Kontaminationen bzw. Kolonisationen (Biofilme) unbelebter Flächen in Innenräumen als Quelle nosokomialer Infektionen (NI) wissenschaftlich weniger umfangreich untersucht; im Einzelfall lässt sich der Zusammenhang häufig nicht nachweisen. Das erklärt die unterschiedliche Bewertung des Stellenwerts der desinfizierenden Flächenreinigung bzw. Flächendesinfektion als Maßnahme der Basishygiene. Inzwischen hat ein Paradigmenwechsel jetzt auch in den anglo-amerikanischen Ländern [2] aufgrund der zunehmenden Aufklärung epidemiologischer Zusammenhänge zwischen dem Vorkommen von Krankheitserregern in der Umgebung des Patienten, der Tenazität und Übertragbarkeit der Erreger auf Patienten sowie der Wirksamkeit der desinfizierenden Flächenreinigung im Rahmen des Ausbruchsmanagements und

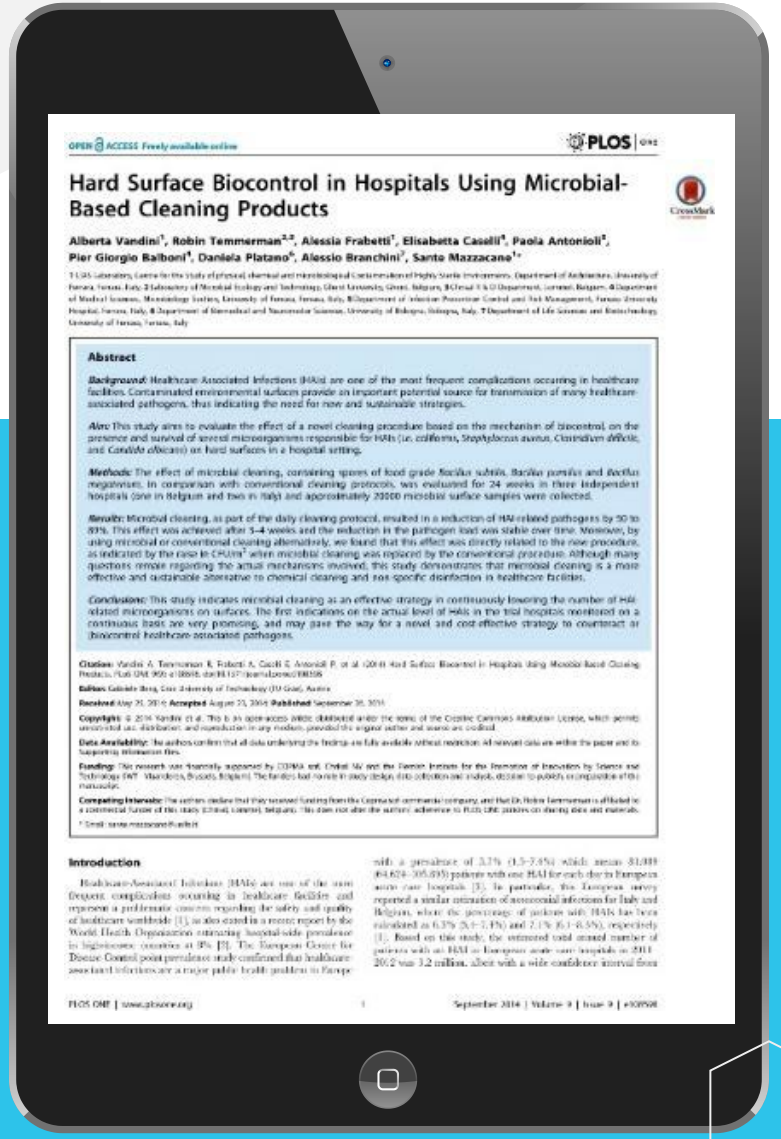
Tab. 1 Kategorien in der Richtlinie für Krankenhaushygiene und Infektionsprävention (2010)

Kategorie IA	Diese Empfehlung basiert auf gut konzipierten systematischen Reviews oder einzelnen hochwertigen randomisierten kontrollierten Studien.
Kategorie IB	Diese Empfehlung basiert auf klinischen oder hochwertigen epidemiologischen Studien *und* strengen, plausiblen und nachvollziehbaren theoretischen Ableitungen.
Kategorie II	Diese Empfehlung basiert auf hinweisenden Studien/Untersuchungen *und* strengen, plausiblen und nachvollziehbaren theoretischen Ableitungen.
Kategorie III	Maßnahmen, über deren Wirksamkeit nur unzureichende oder widersprüchliche Hinweise vorliegen, deshalb ist eine Empfehlung nicht möglich.
Kategorie IV	Anforderungen, Maßnahmen und Verfahrensweisen, die durch allgemein geltende Rechtsvorschriften zu beachten sind.

Grundsätzlich sind in diesem Dokument bei allen Berufs- bzw. Gruppenbezeichnungen immer alle Geschlechter gemeint.

Lower risk of pathogens in hospitals

Vandini et al., 2014. *Hard Surface Biocontrol in Hospitals Using Microbial-Based Cleaning Products.*



Results of the study:

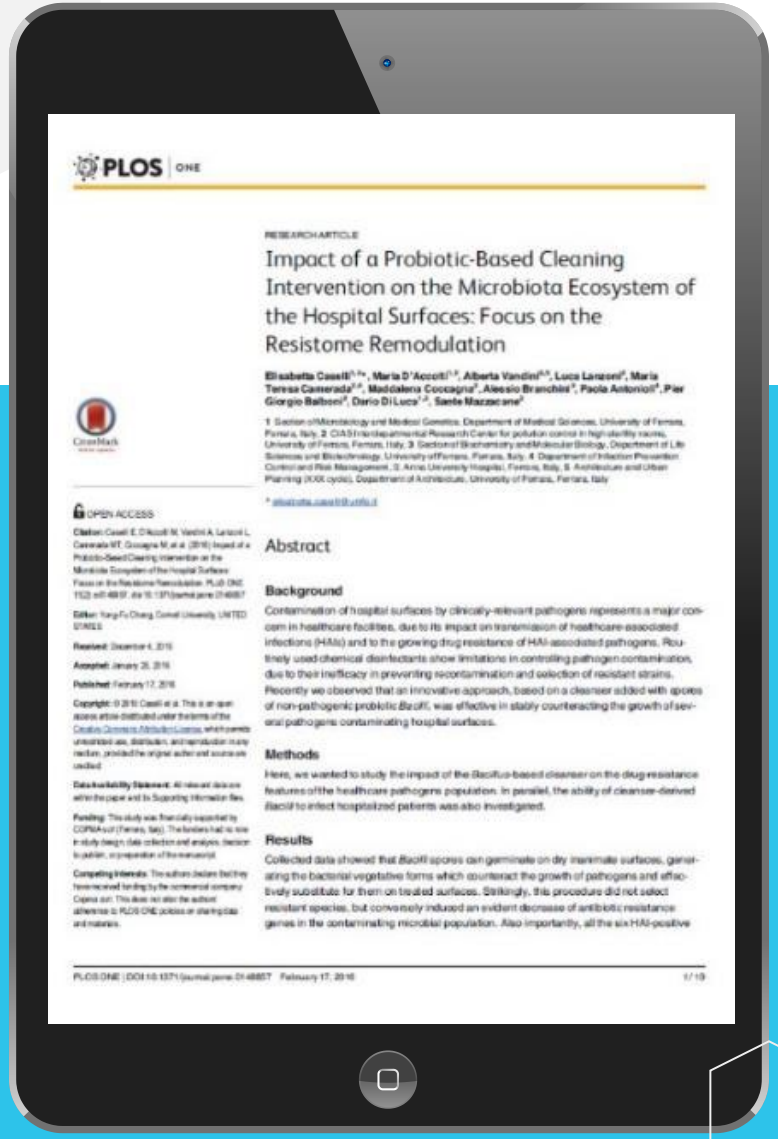
In three hospitals in Belgium and Italy, probitic cleaning products were used for two years. Already after three weeks a decrease of 89% in the risk of resistant germs was measured in all hospitals. Even when comparison was made with chemical disinfectants, the probiotic cleaning products performed better in the permanent, long-term lowering of the risk of pathogens.

Conclusion of the study:

Cleaning with probiotic products is an effective and sustainable way to achieve a lower risk of pathogens on a permanent basis in hospitals.

Lower antibiotic resistance

Caselli et al., 2016a. *Impact of a Probiotic-Based Cleaning Intervention on the Microbiota Ecosystem of the Hospital Surfaces: Focus on the Resistome Remodulation.*



Results of the study:

After two years of cleaning with the probiotic cleaners in an Italian University hospital, it was noticed that the amount of antibiotic resistance among pathogens was strongly reduced. On top of that, the probiotic did not have any negative effect on any of the patients. This proves the safety of the cleaning products of, even when used in locations with very weak patients.

Conclusion of the study:

Probiotic cleaning with the probiotic cleaning products of lowers antibiotic resistance in hospitals and is completely safe to patients.

Lower infection rate in hospitals

Caselli et al., 2018. *Reducing healthcare associated infections incidence by a probiotic based sanitation system. PLOS ONE*

Results of the study:

Ecolabel products were tested for 6 years in hospitals and 32.000 samples were taken to assess the safety and efficacy of the products.

Conclusion of the study:

Long-term use of the probiotic cleaning products in hospitals is safe and lowers the hospital infection rate by 54%!

PLOS ONE

RESEARCH ARTICLE

Reducing healthcare-associated infections incidence by a probiotic-based sanitation system: A multicentre, prospective, intervention study

Elisabetta Caselli[1,2¬], Silvio Brusaferro[3], Maddalena Coccagna[2], Luca Arnoldo[3], Filippo Berloco[4], Paola Antonioli[5], Rosanna Tarricone[6], Gabriele Pelissero[7], Silvano Nola[8], Vincenza La Fauci[9], Alessandro Conte[2], Lorenzo Tognon[10], Giovanni Villone[11], Nelso Trua[12], Sante Mazzacane[2], for the SAN-ICA Study Group[1,2,3,4,5,6,7,8,9,10,11,12¶]

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¶The complete membership of the author group can be found in the Acknowledgements

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Abstract

Healthcare Associated Infections (HAI) are a global concern, further threatened by the increasing drug resistance of HAI-associated pathogens. On the other hand, persistent contamination of hospital surfaces contributes to HAI transmission, and it is not efficiently controlled by conventional cleaning, which does not prevent recontamination, has a high environmental impact and can favour selection of drug-resistant microbial strains. In the search for effective approaches, an eco-sustainable probiotic-based cleaning system (Probiotic Cleaning Hygiene System, PCHS) was recently shown to stably abate surface pathogens, without selecting antibiotic-resistant species. The aim of this study was to determine whether PCHS application could impact on HAI incidence. A multicentre, pre-post interventional study was performed for 18 months in the Internal Medicine wards of six Italian public hospitals (January 1st 2016—June 30th 2017). The intervention consisted of the substitution of conventional sanitation with PCHS, maintaining unaltered any other procedure influencing HAI control. HAI incidence in the pre and post-intervention period was the main outcome measure. Surface bioburden was also analyzed in parallel. Globally, 11,842 patients and 24,875 environmental samples were surveyed. PCHS was associated with a significant decrease of HAI cumulative incidence from a global 4.8% (284 patients with HAI over 5,930 total patients) to 2.3% (128 patients with HAI over 5,531 total patients) (OR = 0.44, CI 95% 0.35–0.54) (P<0.0001). Concurrently, PCHS was associated with a stable decrease of

Differentiate.
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HeiQ Life
Sao Paolo
Brazil
Sales

EUROPE

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HeiQ Chrisal NV
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Taoyuan City
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HeiQ Life
Bangkok
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