VAH List of Disinfectants

A list of procedures for prophylactic disinfection and hygienic handwash issued by the Disinfectants Commission in the Association for Applied Hygiene (VAH) in collaboration with DGHM, DGKH, GfV, GHUP and BVÖGD, tested and deemed to be effective according to the Requirements and Methods for VAH-Certification of Chemical Disinfection Procedures

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Introduction

This List is an inventory of all procedures which had a valid certificate as of 1 September 2022. The exact validity dates can be directly requested from the manufacturer. The current status of certificates by VAH is also available online https://vah-liste.mhp-verlag.de/en/

Issuance of certificates and listing of disinfection procedures were carried out by the Disinfectants Commission in the Association for Applied Hygiene (Verbund für Angewandte Hygiene e. V. (VAH) (Prof. em. M. Exner, M. D., Chairman; Institute of Hygiene and Public Health, Bonn University Hospital, Venusberg-Campus 1, 53127 Bonn, Germany). The List is compiled by the Association for Applied Hygiene in collaboration with the following scientific societies and professional associations: German Society for Hygiene and Microbiology (DGHM), German Society for Hospital Hygiene (DGKH), German Society of Hygiene, German Society for Virology (GfV), Environmental and Public Health Sciences (GHUP), and the German Federal Association of Physicians in Public Health (BVÖGD). In addition, the Disinfectant Commission cooperates with the Federal Union of German Associations of Pharmacists (ABDA), Bundeswehr (German Armed Forces), the Federal Institute for Occupational Safety and Health (BAuA), the Federal Institute for Drugs and Medical Devices (BfArM), the German Veterinary Society (DVG), the German Association for Controlling Viral Diseases (DVV), the Robert Koch-Institut (RKI), and the German Federation of Infection Control Nurses (VHD).

The certificates were issued on the basis of two independent expert opinions that provided proof of the disinfectant action of the preparation in the specified concentrations and for the contact times given for the respective application. These expert opinions were reviewed by the Commission and accepted if they met the provisions of the "Requirements and Methods for VAH Certification of Chemical Disinfection Procedures" by the Disinfectants Commission [1], and pertinent communications on test requirements published in the journal "Hygiene & Medizin".

The "Requirements and Methods for VAH Certification of Chemical Disinfection Procedures" [1] and all subsequent amendments were published reflecting the stock of knowledge valid at that time and the methods based on European standardization endeavours and extended by the principle of efficacy limit value ascertainment. Hence, VAH-certified disinfectants always also fulfill the requirements made by current European standards.

The products are listed solely on the basis of the criteria specified above. Registration and licensing procedures, such as those stipulated by the German Medicinal Products Act (AMG), the Biocidal Product Regulation, or the Medical Device Law Implementation Act (MPDG), are not assessed.

The manufacturers or distributors have issued binding statements that the preparations are marketed only in the formulations in which they were tested for acceptance in the List.

This List of Disinfectants serves as the basis for selection of appropriate disinfection procedures for routine and prophylactic disinfection to prevent infections in hospitals, medical and dental surgeries, (medical) laboratories, public institutions (children's daycare centres, schools, sporting establishments, etc.) and other areas in which the transmission of infections must be prevented. By using VAH listed products, establishments meet the quality assurance requirements stipulated by German infection control regulations at state (Länder) level.

For statutorily mandated disinfection procedures in Germany, please consult the Infection Control Act (IfSG) [2] (with amendments/updates) and the List of Disinfectants of the Robert Koch Institute (RKI) (www.rki.de) [3].

The VAH List takes account only of the disinfectant ingredients as declared by the manufacturer. To facilitate orientation, the products are classified according to the following active substance groups: aldehydes, aldehyde releasing agents, alcohols, alkylamines and/or alkylamine derivatives, amphoterics, compounds releasing chlorine, bromine or iodine, chloramines, glycol derivatives, guanidines or guanidine derivatives, bases, peroxide acids, peroxide compounds, phenol derivatives, phenol ethers, pyridine derivatives, quaternary compounds, inorganic acids, organic acids or heavy metal compounds. The active ingredients and the trademark symbols® are listed according to the specifications of the manufacturers and distributors. The annex to this List provides information on the spectrum of action of the active substances as well as on the nomenclature.

The manufacturers or distributors are required to declare the quantity of each active ingredient on the product packaging.

The listing of a preparation applies only to the specified application process. Any change of the formulation of a listed product must be reported to the head office of the Disinfectants Commission. In such cases the Commission will decide whether, and to what extent, new tests are required.

The Disinfectants Commission reserves the right to undertake further tests if new developments in the testing methodology or regarding the efficacy of particular products come to light. Moreover, it reserves the right to withdraw the corresponding certificate in the event of evidence of no, or insufficient, efficacy.

When their products are certified and listed, the manufacturers and distributors are required to state the certified disinfection parameters on the label, in the instructions for use, and in advertising prospectuses when they make reference to testing according to the "VAH Requirements and Methods" ("tested and found effective") and to the VAH Disinfectants List. Reference may be made to the "VAH Requirements and Methods" only if the thus specified concentration/contact-time relationships are in agreement with the "Requirements and Methods for VAH Certification of Chemical Disinfection Procedure" [1] and the respective amendments.

Testing of the listed products refers only to the effectiveness of the disinfectant. No statements are made about other characteristics of the products, such as skin compatibility, corrosive or cleansing effects.

The disinfectant action of many preparations is impaired in the presence of organic material (e.g., blood, wound secretions, mucus). Therefore the recommendations given here for the respective applications must not be unconditionally applied to other procedures, such as mucous membranes and wound antisepsis or irrigation of body cavities.

As a general rule, freshly prepared working solutions must be used, if the products are not available as 'ready-to-use products'. This rule must always be observed for disinfectants based on peroxide compounds and for chlorine releasing agents since these are not stable (follow instructions given by the manufacturer).

If chlorine-releasing solutions are produced by means of membrane cell electrolysis at the site of use, the manufacturer has to ensure that the product will correspond to the same quality which formed the basis for the two test reports and whose efficacy has been confirmed by both reviewing experts.

The concentrations specified in the Disinfectants List must be exactly observed. Under no circumstances should what is known as a 'shot method' be used. Nor should users add a detergent, e. g. soap or wash-active substances, to the disinfectant at their own discretion ("soap effects").

All products published in the VAH List are bactericidal and, hence, also effective against methicillin-resistant *Staphylococcus aureus* (MRSA), vancomycin-resistant enterococci (VRE), or multiresistant Gram-negative rods. Although the underlying resistance mechanisms do have an impact on the efficacy of antibiotics, they do not influence the activity of disinfectants which are used in microbicidal concentrations [4]. Consequently, VAH-certified concentration/contact time ratios are effective when used as prescribed. In certain situations (e.g. in the event of the cumulated incidence of infections by specific pathogens) the Disinfectants Commission will conduct tests with these bacteria as test organisms in order to ensure that the concentration/contact time ratios listed are also effective in these instances.

Handwash and Disinfection Procedures

The List contains products for the following fields of application:

– Hygienic Handwash

Disinfection products and procedures:

– Hand disinfection
– Skin antisepsis
– Surface disinfection
– Instrument disinfection
– Textile disinfection

Detailed information on the test criteria for the individual procedures is given in the respective sections of the Chapter "Test Methodology".

Listing Virucidal Properties in the VAH List of Disinfectants

On a national and European level great efforts have been made in order to advance and standardize methods for evaluating disinfectants by means of quantitative suspension tests as well as with tests simulating practical conditions. The VAH requirements for listing antiviral activity were updated on 1 November 2021 [5]. When more test methods are published or if the existing test methods are altered, requirements will be modified correspondingly.

With listing antiviral properties in the present VAH List, the user will be provided with the necessary information to make a choice for a suitable disinfectant which has proven efficacy against enveloped viruses, enveloped viruses plus adeno-, noro-, and rotavirus and/or virucidal activity, i.e. against enveloped and non-enveloped viruses. When the listing of antiviral properties is requested by the manufacturer, the pertaining test protocols and test reports of the products are assessed by independent experts of the Commission. Originally, listing required the submission of at least one test protocol/expert report according to the DVV/RKI guidelines of 2005, 2008, 2015 or EN 14476 for the quantitative suspension test or, for surface disinfectants, additionally according to the DVV guideline 2012 or EN 16777, or, for instrument disinfectants, according to EN 17111 for the simulated-use test [6–12].

Currently, antiviral activity can be listed against enveloped viruses, and/or activity against enveloped viruses plus adenovirus, norovirus and rotavirus, and/or virucidal activity, comprising both enveloped and non-enveloped viruses.

The test organisms and test methods are published in the Requirements and Methods for VAH-Certification [5]. Since 1 January 2022, two expert assessments and pertinent test protocols must be submitted for certification of antiviral activity. Products which had filed an application for certification before that date and which not yet fully comply with the updated requirements are currently being reviewed and may continue to be listed if they comply with the updated requirements at the date of their recertification [5]. In the VAH Disinfectants List, the concentration-contact time ratios for activity against viruses are listed in a separate row for the respective product.

Independent of the concentration-contact ratio for activity against viruses stated in the experts reports, the values listed for bactericidal activity must be considered as minimum requirement for actual use. Therefore, the antiviral activity values stated in the VAH List are never lower than the ones for bactericidal activity.

Table 1, listing selected relevant viruses and/or viral diseases, provides the user with information on the viruses which are covered by the efficacy tests performed with the corresponding test viruses.

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Desinfektionsmittel-Kommission im VAH (Ed.). Desinfektionsmittel-Liste des VAH. Stand 1.9.2022. Wiesbaden: mhp Verlag, 2022.

Note:

VAH publications in English are available from:

https://vah-online.de/en/expertise

Table 1: Test viruses for efficacy testing of disinfectants and selected viruses covered by these test viruses.

	Test Viruses	Activity Spectrum (Examples) [1, 2]
Virucidal activity: Active against enveloped and non-enveloped viruses	Adenovirus, *non-enveloped* (Adenovirus Type 5, strain Adenoid 75) Murine Norovirus, *non-enveloped* (MNV, strain S99 Berlin) Poliovirus, *non-enveloped* (Poliovirus type 1, strain LSc-2ab) Polyomavirus SV40, *non-enveloped* (Simianvirus 40, strain 777)	**Papillomaviridae** **Parvoviruses[2]** – Adeno-associated viruses (AAV) – Bocavirus – Parvovirus B19 **Picornaviridae** – Enteroviruses: Coxsackie, Echo, Poliovirus, Rhinoviruses – Hepatovirus: Hepatitis A virus (HAV)[2] – Parechoviruses: Echovirus 22 and 23 **<u>in addition</u> activity against Adenovirus, Norovirus, Rotavirus and enveloped viruses (limited spectrum virucidal activity and activity against enveloped viruses)**
Limited spectrum of virucidal activity	Adenovirus, *non-enveloped* (Adenovirus, type 5, strain Adenoid 75) Murine Norovirus, *non-enveloped* (MNV, strain S99 Berlin)	**Organisms causing viral gastrointestinal infections** – Adenovirus serotypes 40 and 41 – Norovirus – Rotavirus **Organisms causing respiratory infections** – Adenovirus serotype 7 **Organisms causing keratoconjunctivitis** – Adenovirus serotypes 8, 19 and 37 **<u>in addition</u> activity spectrum against enveloped viruses**
Virucidal activity against enveloped viruses	BVDV*, *enveloped* (Bovine Viral Diarrhea Virus) *surrogate virus for Hepatitis C Virus Vacciniavirus, *enveloped* (strain Elstree and/or MVA)	**Organisms causing blood-borne infections** – Hepatitis B virus (HBV) – Hepatitis C virus (HCV) – Human Immunodeficiency Virus (HIV) **Organisms causing respiratory infections** – Human coronavirus (HCoV) 229E and OC43, SARS-CoV-2 – Influenza virus A (e.g. H1N1, H3N2) and B – Metapneumovirus – Respiratory syncytial virus (RSV) **Organisms causing travel-associated infections** – Bunyavirus (Sandfly Fever) – Crimean-Congo haemorrhagic fever (CCHF) virus – Dengue virus, Ebola virus, Yellow fever virus, Hantaviridae, Lassa virus, Marburg virus – TBE (tickborne encephalitis) virus – Rabies virus – MERS-CoV – West Nile virus (WNV) (West-Nile-Fever) **Herpesviridae** – Cytomegalovirus (CVM) – Herpes simplex viruses type 1 and 2 (HSV-1, HSV-2) – Epstein-Barr virus (EBV) – Varizella-zoster virus **Paramyxoviruses** – Measles virus – Mumps virus **Rubella virus**
Chemical-thermal Textile Disinfetion	Minute Virus of Mice, *non-enveloped* (MVM, Murines Parvovirus)	**Please refer to virucidal activity against enveloped viruses, limited spectrum of virucidal activity and virucidal activity**

Restrictions

1. This classification is simply an orientation; the efficacy cannot be estimated with absolute certainty because it is dependend on the active ingredient.
2. For particularly stable non-enveloped viruses such as HAV, parvoviruses or gene vectors such as adeno-associated viruses (AAV), additional testing with the corresponding viruses may be required [13, 14].