Does effective prevention exist?
What can we do to avoid them?

medistus ANTIVIRUS

MEDICAL DEVICE CE 0481

The most common infectious viruses and their virulence

TYPE OF VIRUS	VIRULENCE (%)
Rhinovirus	30–50%
Coronavirus	10–15%
Influenza virus	5–15%
Metapneumovirus	5–10%
Respiratory Syncytial Virus (RSV) (Giant cell respiratory virus)	5%
Parainfluenza	5%
Adeno- and enterovirus	under 5%
Unknown	15–25%

Respiratory infections *(colds)*

A common cold is usually a virus-induced, acute infection of the upper respiratory tract. This type of respiratory infections are among the most common diseases in modern industrial countries. On the average adults suffer up to five times a year a cold, preschoolers even eight to ten times. In most cases the infections are caused by viruses and associated with similar symptoms: shivering, sneezing, runny nose, cough and fatigue. Since antibiotics work only in the treatment of bacterial infections, applying them in case of infections of viral origin, they might remain ineffective.

Infection risks *(pandemics)*

Recently, infections by emerging viruses occur more frequently and they seem to be independent of seasons. These infections manifest themselves as fever from 38 °C and with symptoms such as sore throat, runny nose, cough, muscle and joint pains, headache and diarrhea.

Real influenza has to be dealt with separately from the other respiratory diseases related to cold. This infection is a disease caused by various types of influenza viruses and differs from other respiratory diseases both in its epidemiological, clinical characteristics and also in its impacts. In the spreading of the pathogens there is a similarity to other respiratory diseases, since the influenza virus is also spread by respiratory tiny droplets that become airborne when infected individuals cough or sneeze. But the speed of its dissemination is significantly higher.

Penetration of viruses and bacteria in the body

Infections of the upper respiratory tract caused by viruses or bacteria will not necessarily lead to illness if the immune system is capable of effective defense against pathogens, or the pathogens are hindered at intruding the body by a barrier.

The main goal of a virus is to safeguard its own propagation for which it requires a host cell. To this end, it targets the cells in the oral mucosa and attempts to dock to them. In case of a successful attachment it penetrates the host cell membrane and reprograms it to promote its own multiplication.

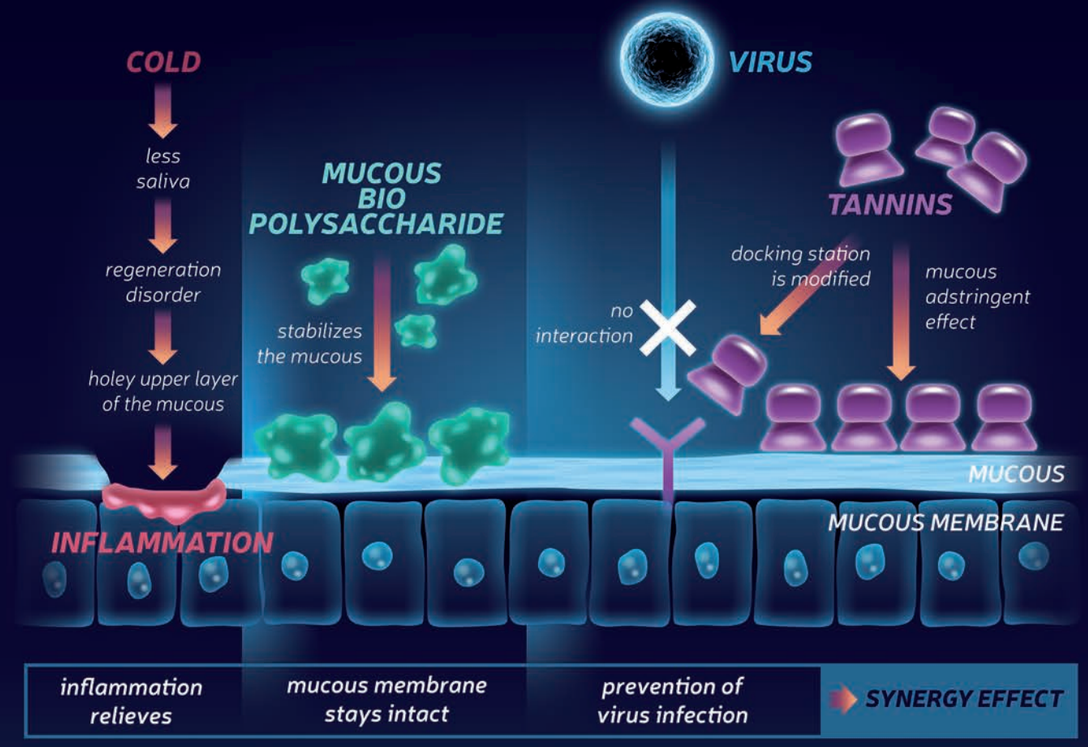
Active defense against infection

The research of the last decades has unambiguously demonstrated that in case of infection pathogens (viruses, bacteria) dock to the carbohydrate structures of the host cell membranes through their proteins based on the so-called key-lock principle. This process occurs in the oral and pharyngeal mucous membranes. In the event this docking process is successful, like a key opening a lock the pathogens penetrate the host cell and commence to multiply. The solution is compelling: we have to impede pathogens in docking to the host cells. Researchers of our times are engaged in the constant pursuit of substances which possess such potentials. Myriads of studies were conducted on plant-based polyphenol compounds which substantiate this so-called astringent effect.

The plant polyphenols and biopolymers that are responsible for the defense reaction are abundant in the Kistosyn® 200 extract of Medistus® Antivirus. The Kistosyn® 200 extract builds a protective film over the throat mucous membranes. Viruses, bacteria and other pathogens are hampered by this physical barrier – assuming you apply the lozenges preventively or at the first signs of scratching in the throat.

What do ***Medistus® Antivirus*** *lozenges contain?*

Medistus® Antivirus lozenges contain Kistosyn® 200 extract.
Medistus® Antivirus is a Class IIa medical device product.
Efficacy and safety have been tested according to the European Medical Device Directive (93/42/EEC).



Medistus® Antivirus is a novel medical device with an active ingredient complex containing plant-based substances. The Kistosyn® 200 extract forms through its natural active substances a protective film over the oral and pharyngeal mucosa. This protective barrier leads to a physical (mechanical) protection against viruses (cold viruses) and bacteria, which helps prevent their penetration into body cells and their further propagation.

The Kistosyn® 200 extract supports through its natural active substances the barrier function of the oral and pharyngeal mucosa by forming a natural film on it. As a result, external irritations can significantly be reduced. In addition, the Kistosyn® 200 extract supports the protection of the oral mucosa from inflammations and thereby the alleviation of cough and dry cough. Due to this physical effect resistance development is not possible.

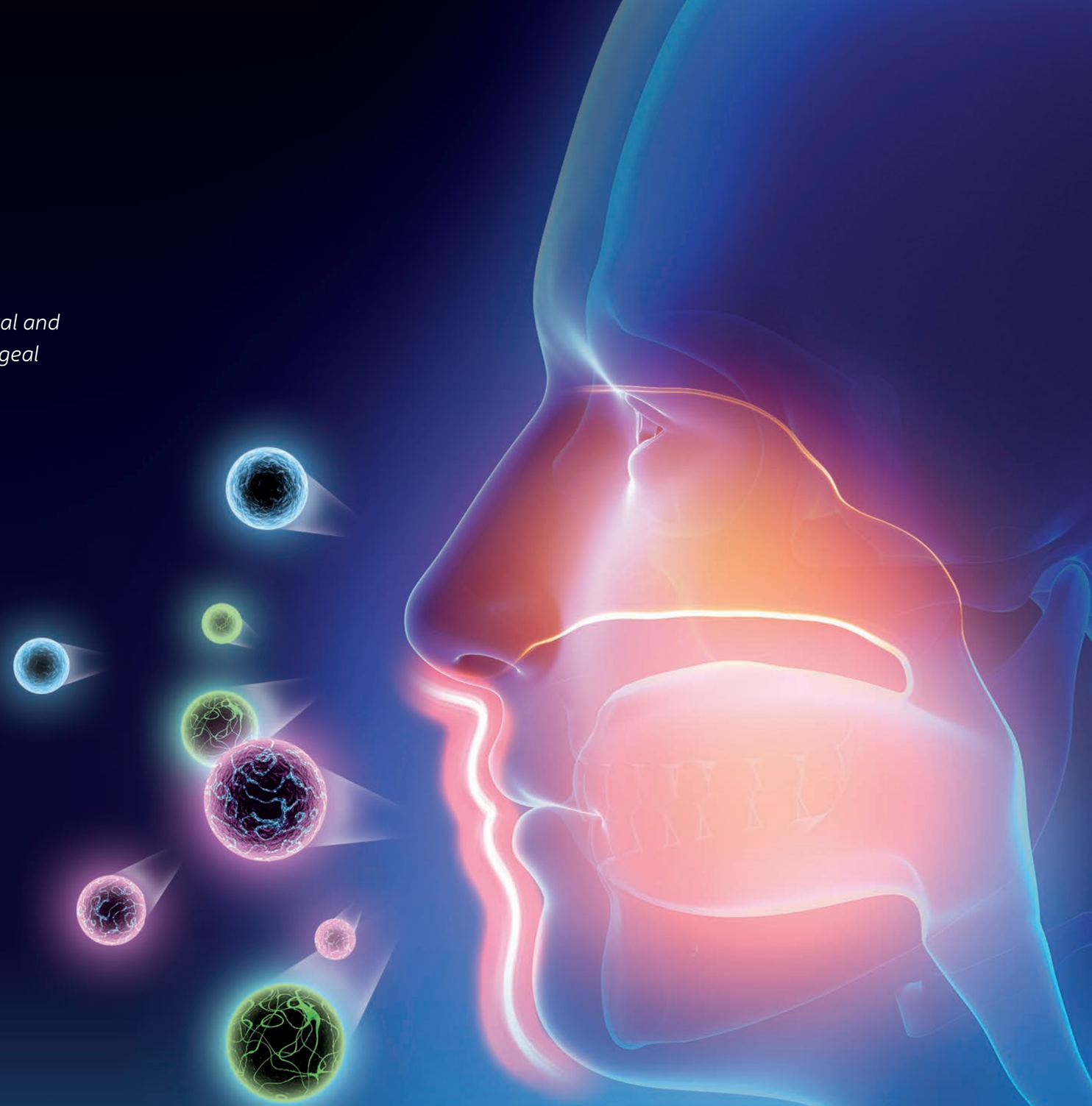
Areas of application

In which cases shall Medistus® Antivirus be applied?

- *To support by physical means the natural barrier function of the oral and pharyngeal mucosa against infectious viruses and bacteria.*
- *For the prevention of infectious and inflammatory airways diseases of viral and bacterial origin by physical (mechanical) barrier formation on the pharyngeal mucosa.*
- *For the alleviation of cough and dry cough.*
- *Also applicable at the first signs of scratching in the throat.*

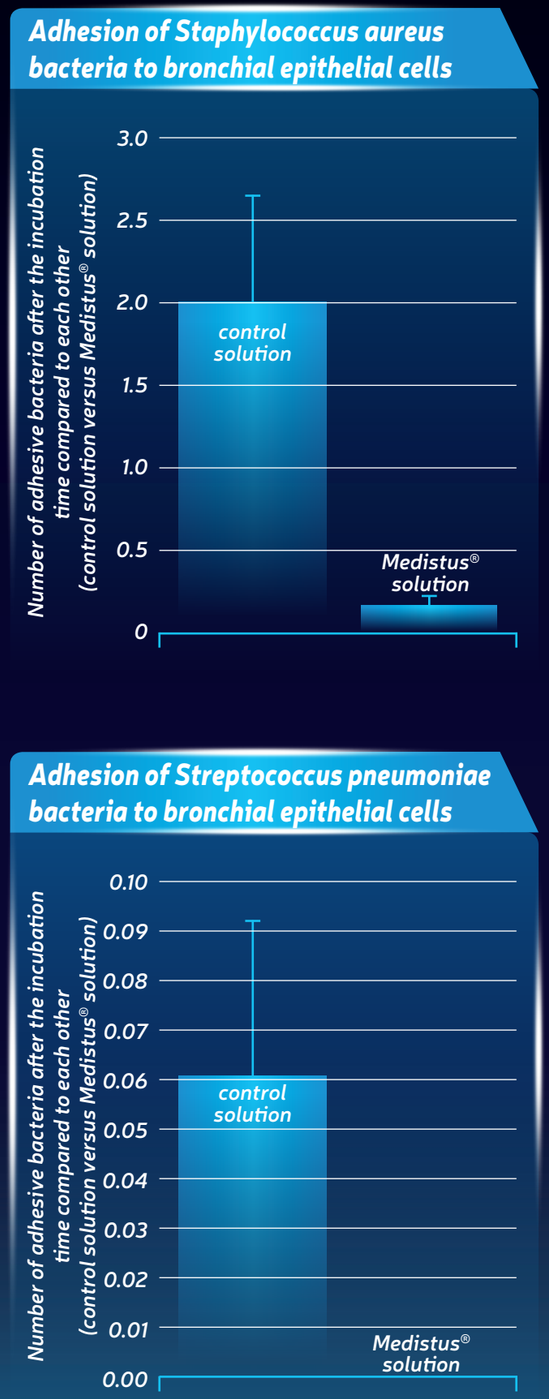
Protection on places with high risk of infection

- *travel*
- *public transportation*
- *education*
- *waiting rooms*
- *shopping*
- *event*



✓ 100% NATURAL ACTIVE INGREDIENT
✓ NO COLORANTS AND NO PRESERVATIVES
✓ SUGAR, GLUTEN AND LACTOSE FREE

Efficacy study/1*



*In vitro tests were performed on the adhesion of **Staphylococcus aureus** bacteria to bronchial epithelial cells. It was investigated whether Medistus® Antivirus lozenges affect the adhesion of bacteria to cells, resulting in preventing or reducing the infection.*
For this purpose, one line of cells (BEAS-2B human bronchial epithelium) was incubated with bacteria ($2.9x10^6$ CFU / ml – $3.0x10^6$ CFU / ml) for an hour with the solution of Medistus® Antivirus lozenges, whereas another line of cells and bacteria did not receive any treatment. After the test period and the rinse of the non-adhesive bacteria, the number of adhesive germs was determined by the lysis of the epithelial cells.

Result: On the cell layer treated with Medistus® Antivirus solution, the bacterial adhesion decreased by 95% compared to the untreated cell layer.

*The same method was used to test the adhesion of **Streptococcus pneumoniae** bacteria to bronchial epithelial cells. The initial germ number used for the incubation was set in this case to $1.7x10^6$ CFU / ml – $1.9x10^6$ CFU / ml.*
The determination of the number of adhesive germs after the test period delivered an outstanding result.

Result: On the cell layer treated with Medistus® Antivirus solution, no living streptococcus bacteria could be detected after the one-hour incubation.

Conclusion: The test results clearly indicate the powerful effect of Medistus® Antivirus lozenges in inactivating bacteria.

**BioTeSys GmbH: In vitro Studie zur Untersuchung des Effekts von Lutschpastillen auf die Bakterienadhärenz an Epithelzellen. BTS1259/18. Datum: 06.09.2018. Esslingen/Germany*

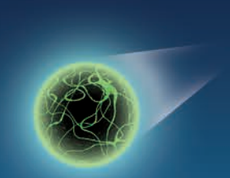
Efficacy study/2

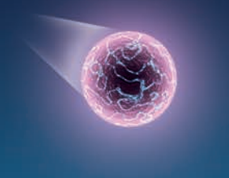
Efficacy study about the antiviral effect of Medistus® Antivirus against H1N1 and H2N2 viruses

The antiviral effect of Medistus® Antivirus lozenges against the common seasonal flu (H1N1) was succesfully tested in an accredited, highly recognised German test laboratory (1).
*The test was performed according to DIN EN 14476. The viruses in the mucosa were mixed with a solution of Medistus® Antivirus lozenges. The study included both normal and OECD heavy load conditions (2). Medistus® Antivirus proved exceptionally effective against the common flu virus. The results show clearly that both in clean and OECD heavy load conditions H1N1 viruses **got inactivated in just 15 seconds**.*

*After the very successful test against common flu, Medistus® Antivirus lozenges were put to a more severe test: the most tenacious Asian avian flu type H2N2 (duck) was merged in the mucosa. This virus type is extremely resistant due to its strong capsid (protein coat). Even in such an adverse environment, Medistus® Antivirus could **inactivate the virus in 5 minutes** in clean conditions. When applying a heavy load with a protein mix according to OECD guidelines, Medistus® Antivirus lozenges could reduce the virus count by 3 log units in only 10 minutes. (Remark: Since Medistus® Antivirus lozenges exert their effect in the mouth well beyond the guideline test limits, the assumption is well supported that even the tenacious avian flu virus gets completely inactivated in real life conditions.)*

The test results clearly indicate the powerful effect of Medistus® Antivirus lozenges in inactivating influenza viruses.





(1) BioTeSys GmbH: In-vitro Studie zur Untersuchung des Effekts von Lutschpastillen auf die Viruslast. BTS 1114/2017. Datum: 13.11.2017. Esslingen/Germany
(2) http://www.oecd.org/chemicalsafety/testing/oecdguidelinesforthetestingofchemicals.htm

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Dosage instructions, type and duration of application

When, how often and how long shall Medistus® Antivirus be applied?

- *For protection at increased risk of airways infection of viral and bacterial origin.*
- *Even at the first signs of scratching in the throat.*
- *Adults: Dissolve a lozenge slowly in the mouth 3 to 6 times a day.*
- *Children older than 12 years (and of at least 25 kg body weight): Dissolve a lozenge slowly in the mouth 3 times a day.*
- *Children older than 6 years: Dissolve a lozenge slowly in the mouth once a day.*

Please note

Keep out of reach of small children. Suitable for children older than 6 years.
Suitable also for pregnant and breastfeeding women.

Side effects

There are no side effects known.

Counter indications

There are no counter indications known.

Interactions

To avoid interactions, in case of taking medicines internally, please leave a pause of 4 hours between the intakes or consult your doctor.

Notes and information concerning the shelf life of the medical device product Medistus® Antivirus

The lozenges shall be used up until the "best before" date marked on the box.

Composition

Active substance: Kistosyn® 200 extract
Other ingredients: maltitol, sorbitol, purified water, ascorbic acid, citric acid, flavor, vegetable oil, stevia extract, peppermint oil.
No preservatives and colorants.
Sugar, gluten and lactose free.
Store in a cool and dry place, protected from light.

Made in Germany

License owner

Innopharm GmbH
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www.medistusantivirus.com