Mini Review ISSN 2639-944X

Journal of Medical - Clinical Research & Reviews

Perspective: Mouthwash in Context with Coronavirus

Frank Mayer*

Retired from Georg-August-University Goettingen, Institute of Microbiology and Genetics, Germany.

***Correspondence:**
Prof. Dr. Frank Mayer, Jaspersstrasse 2 O-7/521 69126 Heidelberg, Germany, Tel: +49 6221 388 521.

Received: 05 April 2020; **Accepted:** 30 April 2020

Citation: Frank Mayer. Perspective: Mouthwash in Context with Coronavirus. J Med - Clin Res & Rev. 2020; 4(4): 1-2.

ABSTRACT

In most cases infection by Corona virus is caused by microdroplets containing fully active virus particles, set free by coughing fits or sneezing or contact with hands or matter contaminated by microdroplets containing fully active Corona viruses. Mouthwash with liquid agents containing antiviral components might be a mean to avoid infection. Agents of this kind, though primarily used against bacteria, in some cases contain also antiviral components. This property might be supported by addition of tannin to the liquid agent. Tannins are known to be also active against „enveloped" viruses. Tannin causes denaturation of proteins. A trial might be appropriate in order to test whether tannin also denatures the proteins on the surface of the Corona virus (e.g. the „spikes" needed for contact with the surface of human cells). Tannins as agents in combination with other components are used in medicine as agents for a wide number of treatments.

Keywords

Corona virus, Mouthwash, Tannin, Protein denaturation.

Perspective

Infection with Corona virus causes a huge number of sick persons or even their.death. As a rule, infection happens by coughing fits or sneezing or contact with hands or matter contaminated by microdroplets containing fully active Corona viruses. Therefore, a distance to other persons of 1.5 to 2 meters is very important, and face masks help to avoid setting free of microdroplets with fully active viruses.

Recently it was discovered that fully active viruses are present in high number in the upper part of the oral cavity. This area might be one of the sites where multiplication of the virus takes place. Contact of viruses with protein complexes exposed at the membrane surface of the human cell takes place. The Corona virus misuses proteins of the human cell that belong to the human cell membrane. Contact of this kind is a precondition for the uptake of the viral nucleic acid into the human cell. As far as the virus is concerned, it has been shown that the protein „stalks" extending from the surface of the virus mediate the contact. This indicates that proteins both exposed on the periphery of the human cell and of the virus are responsible for virus multiplication.

Extensive efforts are underway in the field of development of vaccines against Corona virus, and of gaining more insights into facts and implications of antibodies developed by the human body during the infection.

However, one of the aspects – prevention of the multiplication of the Corona virus by a simple procedure, not involving sophisticated biochemistry and molecular biology – is not discussed. After all, such an approach, if successfully applied, could very much assist all other efforts.

The facts for the development of a – hopefully – applicable relatively simple approach are the very high concentration of Corona viruses in the oral cavity, the existence of liquids for mouthwash such as Hexetidine gluconate-based Hexoral [1], Meridol med chx 0.2%, chlorhexidine gluconate-based [2]. They are known to kill bacteria and enveloped viruses as well (for the Corona virus, this was not yet shown), and the existence of a plant product: Tannin [3,4]. The effects of Hexoral and Meridol med on viruses might be „weak". However, this weak effect might be supported by members of the Tannin group. Tannins are water-soluble.

The kind of their action: tannins remove water from the proteins of microorganisms, thus causing denaturation of the protein structure, i.e. loss of the function of the proteins. By the way: this property is the basis for leather manufacturing: the proteins of the animal skin are denatured by the loss of water by the action of tannin. It could

be anticipated that proteins making up the envelope of the virus (especially the „spikes“) are denatured as well in the presence of tannin. Thus, damaged viruses cannot attach to the receptors exposed at the surface of the human cell. Hence, the viruses are inactivated and have lost their capability for multiplication. Inactivated viruses present in the oral cavity after mouthwash could then be spit out without risk. Application with a spraycan would help to reach the upper part of the oral cavity.

Use of a face mask together with mouthwash could be the combination of choice. This could be true for prevention of healthy people against infection, for early states of infection, and for the protection of surrounding people. It is known that mouth, nose and eyes are „ports of entrance“ for the Corona virus into the human body. Nose and eyes cannot be protected by mouthwash. Nevertheless, mouthwash might considerably reduce the number of fully active Corona virus particles in the body of an infected person. The mouth is assumed to be the main port of entrance, and the oral cavity is a hotspot for virus multiplication.

Conclusion

Proposal: mixtures as described above – with variations of the content of the components – should be prepared and – in vitro - tested regarding the effect on Corona viruses. These tests should be organized by Pharma companies. If the effects of the mixtures are as hoped, the Pharma companies should then have no problems with permissions. Tan drugs are common worldwide for medical treatment of various kinds.

References

1. Deryabin PG, Galegov GA, Andronova, et al. Analysis of Antiviral Properties of Hexoral in Vitro against Some Viruses that Cause Acute Respiratory Infections and Herpes. Bull Exp Biol Med. 2016; 160: 353-356.
2. https//www.fda.gov/Drugs/DrugSafety/umc530975.
3. Theisen LL, Erdelmeier CA, Spoden GA, et al. Tannins from Hamamelis virginiana Bark Extract Characterization and Improvement of the Antiviral Efficacy against Influenza A virus and human Papilloma virus. Plos One. 2014; 9: e88062.
4. Vilhelmova N, Galabov AS, Mileva M. Tannins as Antiviral Agents intec open. 2019.