ColdZyme forms a protective barrier in the throat that deactivates five major common cold viruses

AUTHORS: BJARKI STEFANSSON[1], ÁGÚSTA GUDMUNDSDOTTIR[1,2] AND MATS CLARSUND[3] | **PRESENTING:** FREDRIK LINDBERG[3]

1. Zymetech, Reykjavik, Iceland 2. Faculty of Food Science and Nutrition, Health Sciences Division, University of Iceland, Reykjavik, Iceland 3. Enzymatica AB, Lund, Sweden

BACKGROUND:

Common cold is known to be a heterogeneous group of diseases caused by numerous viruses. Rhinovirus accounts for most cases of common cold, followed by influenza virus, human coronavirus, respiratory syncytial virus (RSV), parainfluenza and adenovirus.
Since common cold viruses mutate frequently it would be beneficial to design treatments that act topically on the surface of the oropharynx through unspecific mechanisms to protect the mucous lining from viral invasion.

For this purpose a medical device, ColdZyme® Mouth Spray (ColdZyme), primarily containing glycerol and Atlantic cod trypsin, has been developed to form a protective barrier and to degrade attachment proteins presented on viral surface. ColdZyme is deposited on the mucous membrane of oropharynx and has a high safety profile to match a mild disease such as the common cold. It is intended to directly inhibit infection by blocking viruses at their point of entry, reduce the probability of catching a cold and help shorten the duration of a cold.

MATERIALS AND METHOD:

A virucidal efficacy suspension test was conducted using a commercially available medical device throat spray (ColdZyme®; Enzymatica, Sweden) against 5 viruses in suspension. After inoculation of virus (untreated or pretreated with ColdZyme) onto host cells, plates were incubated and the cultures scored for viral infection by determining viral-induced cytopathic effect.

The ColdZyme solution contained glycerol, water, cod trypsin, ethanol (<1%), calcium chloride, tris and menthol. Laboratory Testing according to ASTM International E1052-11 method, “Standard Test Method to Assess the Activity of Microbicides against Viruses in Suspension’ was carried out by an independent testing laboratory under GLP conditions; Microbac Laboratories, Inc., USA.

RESULTS:

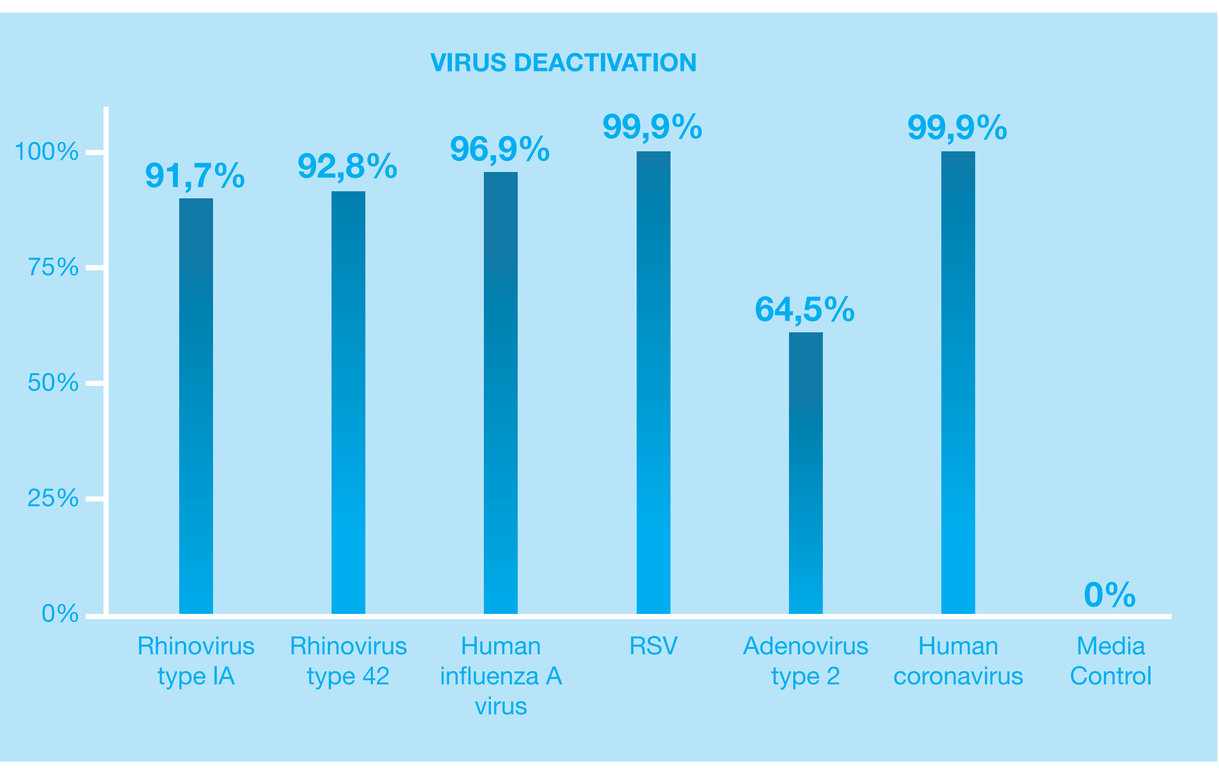
The virus deactivating ability of ColdZyme is presented in Table 1. The viral stock titer control for each assay confirmed that the appropriate titer was used in the experiment and sufficient amount of virus was recovered for the virus recovery control. Cytotoxicity was not detected at any dilution or cell line tested.

VIRUS	LOG10 REDUCTION (MEAN)	PERCENT DEACTIVATION
Rhinovirus type IA	1.08 $\log_{10}$	91.7%
Rhinovirus type 42	1.14 $\log_{10}$	92.8%
Human influenza A virus	1.51 $\log_{10}$	96.9%
RSV	2.94 $\log_{10}$	99.9%
Adenovirus type 2	0.45 $\log_{10}$	64.5%
Human coronavirus	2.88 $\log_{10}$	99.9%

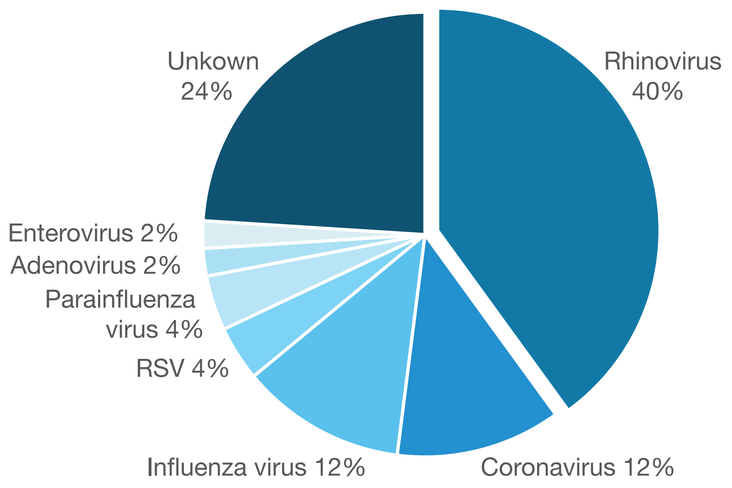
CONCLUSION:

ColdZyme deactivated all viruses tested from 64.5% to 99.9% when incubated with each virus for 20 minutes at 35-37°C. The results indicate that ColdZyme can offer a protective barrier against a wide spectrum of harmful viruses by local virus deactivation in oropharynx.
Stefansson et al, A medical device forming a protective barrier that deactivates four major common cold viruses. Virology Research Reviews, Issue 5, 2017

ColdZyme decativates the majority of viruses that cause the common cold



The viral cause of the common cold



ColdZyme has been evaluated against the majority of viruses known to cause the common cold