

## Important aspects in dealing with Corona Virus

Dear patients and interested parties,  
On this occasion I would like to share with you my current, somewhat different assessment of the corona virus and my treatment approaches.

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### Disclaimer

The contents of these pages are no healing statements. The diagnosis and therapy of diseases and other physical disorders requires treatment by doctors or alternative practitioners. The information on these pages is exclusively informative and should not be used as a substitute for medical treatment. The risk associated with an incorrect diagnosis or treatment can only be reduced by the involvement of a doctor or alternative practitioner. Especially in the case of children and pregnant women, or when breastfeeding and taking medication at the same time, ONLY act in consultation with a doctor or therapist!

# 1 Corona and ImmunSymbiosis

The most important aspect for me is the symbiosis with the bacteria, which we urgently need to integrate new DNA information. If this immune symbiosis succeeds, we can also deal with ANY virus. The premise here is that no germ, not even a virus, is per se "evil" and "pathogenic", but rather enters a sick environment that is no longer able to integrate this new virus information in a reasonable way.

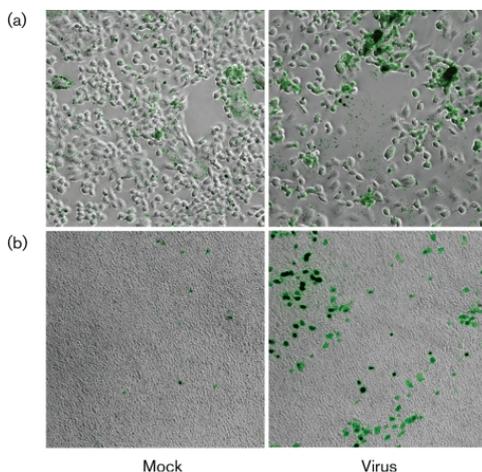
**In my daily work in the practice, streptococci, staphylococci and mycobacteria have emerged as the central players in the ImmunSymbiosis.** In one study, for example, it was observed that mice in which MS-like encephalitis was provoked for experimental purposes were protected from any inflammation of the nervous system if they carried Staphylococcus aureus in their nose. Only mice without Staphylococcus aureus became ill. Another study shows that women with breast cancer lacked bacteria in their breast tissue, especially Streptococcus thermophilus. If streptococci are given near Aspergillus, the fungus no longer releases toxic aflatoxins! Streptococci and mycobacteria degrade mycotoxins. (Studies and background information can be found in my new book "My germs are me" or in English "My Microbes are Me", including a large chapter on viruses, retroviruses and giant viruses, SophiaViva). **Maybe the new book is now more important than ever ...**



## Symbiosis between corona viruses and streptococci

Already in the early 19th century it was observed that increased bacterial activity often occurred during or after a viral infection. This is still interpreted today as an opportunistic infection in a weakened body. However, it could also be a symbiotic reaction. And this idea also seems to be confirmed when dealing with the corona virus information. Study 1 "Infection with human coronavirus NL63 enhances streptococcal adherence to epithelial cells" shows that in coronavirus an increased cell attachment of Streptococcus pneumoniae (pneumococci) to the respiratory epithelial cells can be observed. A study that I have listed in the book shows that fibroblasts, cells of the connective tissue, change into pluripotent stem cells after adhesion and uptake of streptococci. So it is obvious to me that the attachment of streptococcus to corona virus infected cells is an important and symbiotic process for the healthy integration of the virus DNA.

A picture from this study: Respiratory epithelial tissue (2 different named a and b), Streptococcus pneumoniae stained green, left without corona, right with corona virus infection. We see the amount of Strep in green when Corona is present.



## Symbiosis between corona virus and staphylococci

Another purpose of attachment is probably to produce a controlled, moderate inflammation to better deal with the virus. Studies 2 and 3 show that *Staphylococcus aureus* also becomes more active when the virus is involved. Especially one cell wall component of gram-positive bacteria, lipoteichoic acid, leads to inflammation and an activation of the innate immune system. I also suspect an intrinsically symbiotic process here, which facilitates the handling of the virus.

Study 3 already mentioned that *Staph aureus* occurs in excess in factory farming (and massive, uncritical use of antibiotics). And the germs have had to undergo massive changes due to the pressure of antibiotics, so they may no longer be capable of a sensitive provocation of immune reactions. The inflammatory reaction gets out of control here.

### Problems of ImmuneSymbiosis

- Do we even still have the originally "real" *Streptococcus pneumoniae*, *Staph aureus* or have they already changed significantly?
- Does our immune system react excessively to this movement, e.g. because these streptococci are associated with an early trauma (separation from the mother because of a lung infection after birth ... )?
- What happens if we inhale disinfectants at the same time? ("For those nurses who used disinfectants at least once a week to clean surfaces, the risk of developing COPD (lung disease) was increased by 22 percent," reports Prof. Dr. med. Dennis Nowak, member of the Board of Trustees of the German Lung Foundation and Director of the Institute and Polyclinic for Occupational, Social and Environmental Medicine in Munich. <https://www.lungenaerzte-im-netz.de/news-archiv/meldung/article/regelmaessiger-gebrauch-von-desinfektionsmitteln-kann-das-risiko-fuer-copd-erhoehen/>)
- Which mutated germs does a patient inhale in hospital?
- Did the cases that now show a second infection with corona virus receive antibiotics?

### Different courses of disease

Why do mild or severe, even fatal, courses of disease occur?

I suspect light, mild symptoms are the result of a successful ImmunSymbiosis, in which streptococci and staphylococci (and certainly many others) in a healthy microbial environment integrate the virus with intelligent inflammatory reactions.

Severe disease progressions indicate a pathological, sick microbial environment with defective and excessive immune reactions. Especially hospital staff could be at risk here, whose lung environment is weakened by the permanent inhalation of disinfectants. The strep could make all the difference...

## 2 Possible treatment approaches to restore a healthy Immunosymbiosis

### Symbiosis with viruses

- **HNO Colloid**, colloidal silver, gold, copper in the acute phase, spray 3-10 x day in nose and throat and inhale deeply
- **Liquorice** alcohol extract has a regulatory influence on viruses, streptococci and staphylococci, for children I use liquorice juice, for adults alcohol extract liquorice
- (Attention: Liquorice can increase blood pressure, do not use if you know you have high blood pressure)
- **Kalmegh** (*Andrographis*) and **green tea** alcohol extract

- Inhale **propolis** (5-10 tr. alcohol tincture in hot water and steam)
- Fill the lungs with **probiotic microbes** (breathing in the forest, making probiotic nasal spray from water and probiotic germs)
- **Sage or thyme vinegar** (Sage and viruses study 5, 13). We use real fermentation vinegar, which has never been heated and is therefore full of bacteria. 1-2 x day a teaspoon in a little water, pull it through your teeth, gurgle, swallow. Possibly also strongly diluted with water as nasal and throat spray.
- Alcohol extract mixtures for the regulation of viruses

#### VivaVira

- Lakritze | Liquorice (*Glycyrrhiza glabra*)
- Melisse | Lemon Balm (*Melissa officinalis*)
- Pfefferminze | Peppermint (*Mentha piperita*)
- Johannisbeere | Black Currant (*Ribes nigrum* + Gemmo)
- Vogelmiere | Chickweed (*Stellaria media*)
- Thymian | Thyme (*Thymus vulgaris*)
- Ingwerwurzel | Ginger (*Zingiber officinale*)
- Ringelblume | Marigold (*Calendula officinalis*)

#### VivaRetro

- Birke | Birch (*Betula pubescens*)
- Lakritze | Liquorice (*Glycyrrhiza glabra*)
- Johanniskraut | St John's Wort (*Hypericum perforatum*)
- Olivenblatt | Olive tree leaves (*Olea europaea* + gemmo)
- Helmkraut | Blue Skullcap (*Scutellaria lateriflora*)
- Grüner Tee | Green Tea (*Camellia Thea chinensis*)
- Einjähriger Beifuß | *Artemisia annua* (*Artemisia annua*)
- Zistrose | Rock Rose (*Cistus incanus*)  
(scutellaria not for children under 12 years, St. John's wort not together with antidepressants which influence the serotonin level, photosensitizing)

#### Symbiosis with streptococci and other important bacteria

- homeopathic preparation of Strep pneu (I use the **frequency chord Strep | Pneumococcus and Staphylococcus** of SophiaViva as spray for inhalation), also Spenglersan Colloids OM and T
- **Psychokinesiology** in relation to Strep pneu and Staphylococcus to separate emotional conflicts
- Alcohol extract mixture for the regulation of streptococci and staphylococci: **VivaPanda**

#### Anti-inflammatory treatment

- in acute cases, the **i.v. vitamin C** seems to be very effective according to the experiences from China, between 50 and 200mg vitamin C i.v. per kilogram body weight, 3 days in a row
- Regulation of inflammatory and anti-inflammatory cytokines:
- **Frequency chord neuroinflammation 1** (TNF- $\alpha$ , IFN- $\gamma$ , interleukins 1 $\beta$ , 6, 17)
- **Frequency chord neuroinflammation 2** (TGF- $\beta$ , BDNF (brain-derived neurotrophic factor), interleukins 4, 10)

#### Support for the lungs

- Alcohol extract mixture to strengthen and regenerate the lungs: **VivaPulma**

### Essential oils, studies 4 - 14, coronavirus, viruses in general, retroviruses

- **Rosemary**, the most important oil for me at the moment (also prevents Alzheimer's disease, so you don't forget to take it ;-))
- **Thyme**
- **Lemongrass**
- **Oregano**

We use cotton bags with Heilwolle, which are included with every oil. Drip 1 drop of oil per day into the bag (can also be mixed) and inhale deeply through mouth and nose several times a day. The sachets can also be put in bed at night. Attention, the eyes could be irritated overnight.

Studies with live MRI immediately show altered brain activity in different regions, depending on whether inhalation is through the mouth or nose. We therefore always recommend both. By regulating neuroinflammation, we are able to achieve a superordinate modulation of the immune system in addition to the direct effect on the respiratory tract.

Remedies for my research are available at [www.sophiaviva.de](http://www.sophiaviva.de) resp. [shop.sophiaviva.de](http://shop.sophiaviva.de).

## 3 Minimal Protokoll

- **HNO Colloid**, colloidal silver, gold, copper in the acute phase, spray 3-10 x day in nose and throat and inhale deeply
- **Liquorice** alcohol extract, 2-3 x 5-15 drops, children 1-2 teaspoons of **liquorice juice**, (Attention: do not use if you have known high blood pressure!)
- **Kalmegh (Andrographis) and green tea** alcohol tincture, 2-3 x 5-15 drops
- **VivaVira** mixture of different herbal alcohol extracts, 2-3 x 5-15 drops
- Inhale **propolis** (5-10 drops alcohol tincture in hot water and steam)
- **essential oil rosemary**, inhale several times a day
- in acute cases, **i.v. vitamin C**, between 50 and 200mg vitamin C i.v. per kilogram body weight, 3 days in a row

## 4 Studies

### Study 1

[J Gen Virol.](#) 2011 Jun; 92(Pt 6): 1358–1368.

doi: [10.1099/vir.0.028381-0](https://doi.org/10.1099/vir.0.028381-0)

**Infection with human coronavirus NL63 enhances streptococcal adherence to epithelial cells**

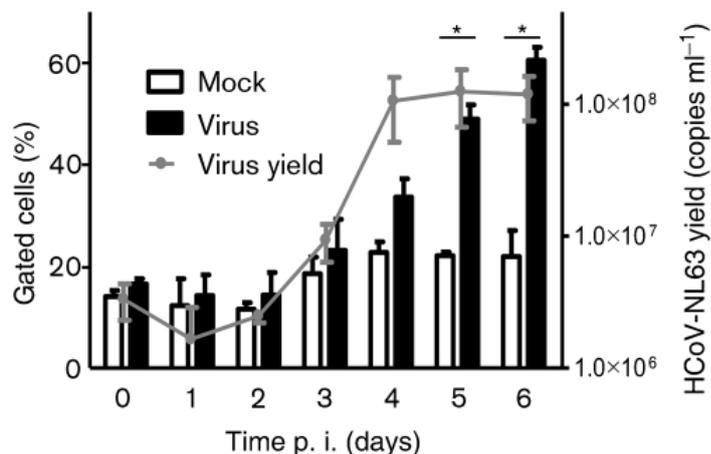
[Anna Golda](#), et al.

In this study, we evaluated the effect of HCoV-NL63 on adherence of a number of bacterial species to epithelial cells and showed that coronavirus infection results in increased adherence of *Streptococcus pneumoniae* to epithelial cells.

Briefly, cells were incubated with *Streptococcus pneumoniae* at an m.o.i. of 500. Such a high dose of bacteria was required to visualize the binding of bacteria to mock-treated cells. Analysis revealed that at day 6 post-inoculation (p.i.), HCoV-NL63 infection significantly enhanced *Streptococcus pneumoniae* adherence to LLC-MK2 cell monolayers (Fig. 1a). In contrast, adhesion of the other bacteria tested to virus-infected cells was not markedly altered compared with mock-treated cells (Fig. 1a).

#### Adherence of *Streptococcus pneumoniae* to HCoV-NL63-infected epithelium

To determine whether there is a link between HCoV-NL63 replication and pneumococcal adhesion to LLC-MK2 cells, modulation of bacterial adhesion was studied on consecutive days following virus inoculation. Concurrently, the HCoV-NL63 yield was assessed by employing real-time PCR. Flow cytometric analysis detected no increase in the number of adhered *Streptococcus pneumoniae* in control and infected cells up to day 3 p.i. Compared with mock-treated LLC-MK2 cells, a significant enhancement in *Streptococcus pneumoniae* adhesion to virus-infected LLC-MK2 cells was observed at day 4 p.i. The number of cells binding *Streptococcus pneumoniae* progressively increased over the 2 days following inoculation, coinciding with virus replication (Fig. 2). After an initial lag period, HCoV-NL63 replicated efficiently in LLC-MK2 cells, with a steep rise in virus yield at day 3 p.i. Importantly, *Streptococcus pneumoniae* did not adhere to cells inoculated with UV-inactivated virus, suggesting that increased adherence is dependent on virus replication (data not shown).



Adhesion of *Streptococcus pneumoniae* to HCoV-NL63-infected LLC-MK2 cells increases in a time-dependent manner that correlates with virus yield. Pneumococcal adhesion was quantified by FACS and is expressed as the percentage of cells showing increased fluorescence. The results are shown as means $\pm$ sd of three independent experiments. The statistical significance of observed differences was estimated using Student's *t*-test; \*,  $P < 0.05$ .

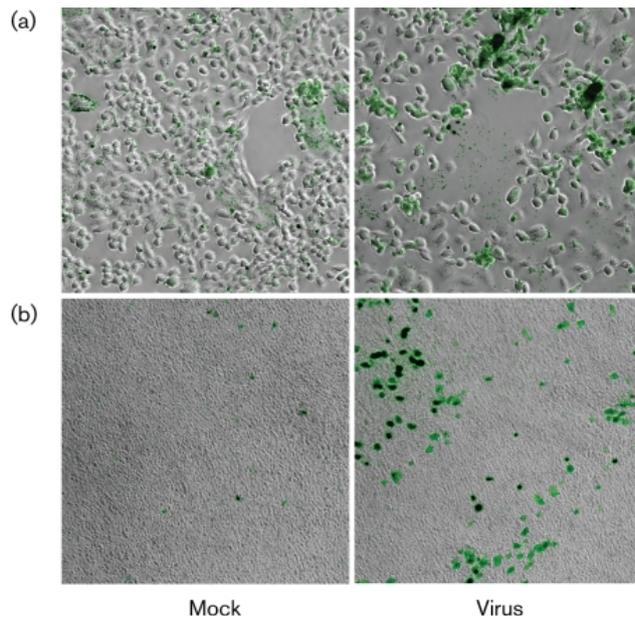


Fig. 3.

Adhesion of *Streptococcus pneumoniae* to LLC-MK2 cells (a) and HAE cultures (b) is increased following infection with HCoV-NL63. Fluorescence images from FITC-labelled bacteria and bright-field images were obtained using a fluorescence microscope. Magnification:  $\times 200$  (a);  $\times 100$  (b). Data are representative of two independent experiments.

Furthermore, a pathogenic synergism **between rhinovirus and *Staphylococcus aureus* and *Streptococcus pneumoniae*** has been identified. It was demonstrated that human rhinovirus infection promotes internalization of *Staphylococcus aureus* into epithelial cells by the secretion of inflammatory cytokines [interleukin (IL)-6 and IL-8] and overexpression of ICAM-1 on infected cells.

## Study 2

Virulence. 2018; 9(1): 1354–1363.

Published online 2018 Aug 26. doi: [10.1080/21505594.2018.1504561](https://doi.org/10.1080/21505594.2018.1504561)

## ***Staphylococcus aureus* colonization and non-influenza respiratory viruses: Interactions and synergism mechanisms**

M. Fedy Morgene, et al.

On the contrary, synergistic effect between *S. aureus* and coronavirus has been demonstrated *in vivo* in a swine model. Lipoteichoic acid from *S. aureus* increased the susceptibility to coronavirus infection in pigs via increased secretion of pro-inflammatory cytokines IL-6, IL-12, IL-23 and IFN- $\gamma$ <sup>[36]</sup>. **To date, the lack of clinical and experimental data about the relationship between *S. aureus* colonization and other respiratory viruses complicates the understanding of potential interactions between these pathogens.**

## Study 3

[Vet J.](#) Author manuscript; available in PMC 2012 May 1.

Published in final edited form as:

[Vet J. 2011 May; 188\(2\): 210–215.](#)

Published online 2010 Apr 20. doi: [10.1016/j.tvjl.2010.03.001](https://doi.org/10.1016/j.tvjl.2010.03.001)

PMCID: PMC2932768

NIHMSID: NIHMS199590

PMID: [20409735](https://pubmed.ncbi.nlm.nih.gov/20409735/)

### **Lipoteichoic acid from *Staphylococcus aureus* exacerbates respiratory disease in porcine respiratory coronavirus-infected pigs**

[Kalina Atanasova](#), et al.

The findings suggest that the experimentally-induced respiratory disease was not mediated by cytokine over-production, but rather reflected the concerted action of particular cytokine interactions and/or as yet unidentified mediators. This is the first in vivo study to report the synergistic interaction between a virus and LTA in enhancing the severity of respiratory disease in the pig. Given that Gram-positive bacteria, capable of producing LTA, are commonly found in pig accommodation, the role of this compound in the development of the porcine respiratory disease complex requires further investigation.

## Study 4

### **Die Schulmedizin entdeckt die essentiellen Öle als Lösung für die stetig wachsende Resistenz von Mikroorganismen.**

J Microbiol Biotechnol. 2017 Mar 28;27(3):429-438. doi: [10.4014/jmb.1608.08024](https://doi.org/10.4014/jmb.1608.08024).

Antimicrobial Activity of Basil, Oregano, and Thyme Essential Oils.

Sakkas H1, Papadopoulou C1.

For centuries, plants have been used for a wide variety of purposes, from treating infectious diseases to food preservation and perfume production. Presently, the increasing resistance of microorganisms to currently used antimicrobials in combination with the appearance of emerging diseases requires the urgent development of new, more effective drugs. Plants, due to the large biological and structural diversity of their components, constitute a unique and renewable source for the discovery of new antibacterial, antifungal, and antiparasitic compounds. In the present paper, the history, composition, and antimicrobial activities of the basil, oregano, and thyme essential oils are reviewed.

## Study 5

[Molecules.](#) 2019 Jun; 24(11): 2130.

Published online 2019 Jun 5. doi: [10.3390/molecules24112130](https://doi.org/10.3390/molecules24112130)

### **Essential Oils as Antimicrobial Agents—Myth or Real Alternative?**

[Katarzyna Wińska](#),<sup>1,\*</sup> [Wanda Mączka](#),<sup>1,\*</sup> [Jacek Łyczko](#),<sup>1</sup> [Małgorzata Grabarczyk](#),<sup>1</sup> [Anna Czubaszek](#),<sup>2</sup> and [Antoni Szumny](#)<sup>1</sup>

EO of *Salvia officinalis* was active against severe acute respiratory coronavirus SARS-CoV (RNA virus), which was obtained from the sputum of a patient hospitalized with a diagnosis of SARS (severe acute respiratory syndrome) in Frankfurt University Hospital.

## Study 6

[J Med Chem.](#) 2007 Aug 23;50(17):4087-95. Epub 2007 Jul 31.

### Specific plant terpenoids and lignoids possess potent antiviral activities against severe acute respiratory syndrome coronavirus.

[Wen CC](#), et al.

Betulinic acid (13) and savinin (16) were competitive inhibitors of SARS-CoV 3CL protease with  $K_i$  values =  $8.2 \pm 0.7$  and  $9.1 \pm 2.4$   $\mu\text{M}$ , respectively. Our findings suggest that specific abietane-type diterpenoids and lignoids exhibit strong anti-SARS-CoV effects.

#### *Phytocompounds as Anti-SARS Virus Agents*

**Table 1.** Phytocompounds Tested against CPE of SARS-CoV on Vero E6 Cells<sup>a</sup>

compound	test concentration ( $\mu\text{M}$ )				
	20	10	3.3	1	0
Diterpenoids (Abietane-type)					
1	+++	+++	++	-	-
2	+++	+++	N.T.	N.T.	-
3	+++	+++	N.T.	N.T.	-
4	+++	+++	N.T.	N.T.	-
5	+++	+++	+	-	-
6	+++	+++	N.T.	N.T.	-
7	+++	++	-	-	-
8	+++	++	++	-	-
Diterpenoids (Labdane-type)					
9	+++	+++	N.T.	N.T.	-
10	+++	++	+	-	-
Sesquiterpenoids					
11	+++	++	+	-	-
12	+++	++	++	+	-
Triterpenoids (Lupane-type)					
13	+++	++	+	-	-
14	+++	+++	N.T.	N.T.	-
Lignoids					
15	+++	++	++	+	-
16	+++	+++	N.T.	N.T.	-
17	+++	+++	N.T.	N.T.	-
18	+++	+++	++	-	-
19	+++	+++	+	-	-
curcumin, 20	++	+	-	-	-
niclosamide, 21	+++	++	++	+	-
valinomycin, 22	+++	++	++	+	-
glycyrrhizin, GL	-	-	-	-	-
18 $\beta$ -glycyrrhetic acid	-	-	-	-	-

<sup>a</sup> +++, ++, + represent approximately <25%, 25–50%, and 50–70% of CPE reduction, respectively. -: no effect was observed. N.T.: not tested.

## Study 7

### Rosmarin Essential Oil

[Evid Based Complement Alternat Med.](#) 2016; 2016: 2680409.

Published online 2016 Jan 28. doi: [10.1155/2016/2680409](https://doi.org/10.1155/2016/2680409)

### The Therapeutic Potential of Rosemary (*Rosmarinus officinalis*) Diterpenes for Alzheimer's Disease

[Solomon Habtemariam](#)\*

Among the most important group of compounds isolated from the plant are the **abietane-type phenolic diterpenes** that account for most of the antioxidant and many pharmacological activities of the plant. Rosemary diterpenes have also been shown in recent years to inhibit neuronal cell death induced by a variety of agents both *in vitro* and *in vivo*. The therapeutic potential of these compounds for Alzheimer's disease (AD) is reviewed in this communication by giving special attention to the chemistry of the compounds along with the various pharmacological targets of the disease. The multifunctional nature of the compounds from the general antioxidant-mediated neuronal protection

to other specific mechanisms including brain inflammation and amyloid beta ( $A\beta$ ) formation, polymerisation, and pathologies is discussed.

## Study 8

### Oregano Essential Oil

[Molecules](#). 2017 Jun; 22(6): 989.

Published online 2017 Jun 14. doi: [10.3390/molecules22060989](https://doi.org/10.3390/molecules22060989)

### Essential Oils of Oregano: Biological Activity beyond Their Antimicrobial Properties

[Nayely Leyva-López](#), [Erick P. Gutiérrez-Grijalva](#), [Gabriela Vazquez-Olivo](#), and [J. Basilio Heredia](#)\*

## Study 9

### Anis Essential Oil

[Evid Based Complement Alternat Med](#). 2011; 2011: 253643.

Published online 2011 Feb 14. doi: [10.1093/ecam/nep187](https://doi.org/10.1093/ecam/nep187)

### Screening for Antiviral Activities of Isolated Compounds from Essential Oils

[Akram Astani](#),<sup>1,2</sup>, [Jürgen Reichling](#),<sup>3</sup> and [Paul Schnitzler](#)<sup>1,\*</sup>

Essential oil of star anise as well as phenylpropanoids and sesquiterpenes, for example, trans-anethole, eugenol,  $\beta$ -eudesmol, farnesol,  $\beta$ -caryophyllene and  $\beta$ -caryophyllene oxide, which are present in many essential oils, were examined for their antiviral activity against herpes simplex virus type 1 (HSV-1) *in vitro*.

sesquiterpenes, for example, triptofordin C-2 and sesquiterpene coumarins inhibit cytomegalovirus [35], severe acute respiratory syndrome coronavirus [49] and rhinovirus [37].

## Study 10

[Phytother Res](#). 2016 Sep;30(9):1420-44. doi: 10.1002/ptr.5652. Epub 2016 Jun 16.

### Therapeutic Potential of Essential Oils Focusing on Diterpenes.

[Islam MT](#)<sup>1,2,3</sup>, [da Mata AM](#)<sup>2</sup>, [de Aguiar RP](#)<sup>2</sup>, [Paz MF](#)<sup>1,2</sup>, [de Alencar MV](#)<sup>1,2</sup>, [Ferreira PM](#)<sup>1,2,4</sup>, [de Carvalho Melo-Cavalcante AA](#)<sup>1,2</sup>.

Among all plant derivatives, essential oils (EOs) have gained the attention of many scientists. Diterpenes, a family of components present in some EO, are becoming a milestone in the EOs world. The goal of this review is to describe a scenario of diterpenes taking into health-consumption department. Previous studies revealed that diterpenes have antioxidant, antimicrobial, antiviral, antiprotozoal, cytotoxic, anticancer, antigenotoxic, antimutagenic, chemopreventive, antiinflammatory, antinociceptive, immunostimulatory, organoprotective, antidiabetic, lipid-lowering, antiallergic, antiplatelet, antithrombotic, and antitoxin activities. In

conclusion, diterpenes may be an immense featuring concern in pharmaceutical consumption from a drug discovery point of view.

## Study 11

[BMC Vet Res.](#) 2019; 15: 178.

Published online 2019 May 29. doi: [10.1186/s12917-019-1925-6](https://doi.org/10.1186/s12917-019-1925-6)

### **In vitro antiviral activity of fifteen plant extracts against avian infectious bronchitis virus**

[Raimundas Lelešius](#), et al.

Many extracts of plants acted against IBV prior to and during infection, but the most effective were those of *M. piperita*, *T. vulgaris* and *D. canadense* .

IB is a highly contagious respiratory and occasionally urogenital disease in chickens [1]. IBV affects the upper respiratory tract and reduces egg production [2]. It is a coronavirus that belongs to the *Coronaviridae* family. IBV is an enveloped virus with a single-stranded positive-sense linear RNA molecule

Table 1

## Antiviral effect of plant extracts

No.	Latin name (family)	Part	Antiviral effect			
			Virus pre-treatment with extract			Cell pre-treatment prior to infection
			prior to infection	during infection	after infection	
1.	<i>Satureja montana</i>	herb	+	-	+	-
2.	<i>Chamaemelum nobile</i>	herb	+	-	-	-
3.	<i>Perilla frutescens</i>	herb	+	-	-	-
4.	<i>Agastache foeniculum</i>	herb	+	-	-	-
5.	<i>Origanum vulgare</i>	herb	+	+	-	-
6.	<i>Mentha piperita</i>	herb	+	+	-	-
7.	<i>Geranium macrorrhizum</i>	herb	-	-	-	-
8.	<i>Melissa officinalis</i>	herb	+	+	-	-
9.	<i>Angelica</i>	leaves	-	-	-	-
10.	<i>archangelica</i>	roots	-	-	-	-
11.	<i>Thymus vulgaris</i>	herb	+	+	-	-
12.	<i>Hyssopus officinalis</i>	herb	+	+	-	-
13.	<i>Nepeta cataria</i>	herb	+	-	-	-
14.	<i>Echinacea purpurea</i>	herb	+	-	-	-
15.	<i>Salvia officinalis</i>	herb	+	+	-	-
16.	<i>Desmodium canadense</i>	herb	+	+	-	-

## Study 12

### Retroviren

#### Thymian, Zitronengras, Rosmarin

Chem Biodivers. 2018 Feb;15(2).

Chemical Composition of Essential Oils from *Thymus vulgaris*, *Cymbopogon citratus*, and *Rosmarinus officinalis*, and Their Effects on the HIV-1 Tat Protein Function.

Feriotto , Marchetti , Costa , Beninati , Tagliati , Mischiati

Abstract

Essential oils of *Thymus vulgaris*, *Cymbopogon citratus*, and *Rosmarinus officinalis* were active in interfering with Tat functions, encouraging further studies to identify single terpenes responsible for the antiviral activity. In view of the quite different composition of these essential oils, we concluded that their interference on Tat function depends on specific terpene or a characteristic blend.

## Study 13

### Pfefferminz, Melisse, Salbei, wässrige Auszüge

Retrovirology. 2008; 5: 27.

#### **Aqueous extracts from peppermint, sage and lemon balm leaves display potent anti-HIV-1 activity by increasing the virion density**

Silvia Geuenich, et al.

*Extracts from lemon balm (Melissa officinalis L.), peppermint (Mentha × piperita L.), and sage (Salvia officinalis L.) exhibited a high and concentration-dependent activity against the infection of HIV-1 in T-cell lines, primary macrophages, and in ex vivo tonsil histocultures with 50% inhibitory concentrations as low as 0.004%.*

## Study 14

### Antiviral

#### Zitronengras

Microbiol Immunol. 2003;47(9):681-4.

The inhibitory effect of essential oils on herpes simplex virus type-1 replication in vitro. Minami M1, Kita M, Nakaya T, Yamamoto T, Kuriyama H, Imanishi J.

The antiviral effect of 12 essential oils on herpes simplex virus type-1 (HSV-1) replication was examined in vitro. The replication ability of HSV-1 was suppressed by incubation of HSV-1 with 1% essential oils at 4 C for 24 hr. Especially, **lemongrass completely inhibited the viral replication even at a concentration of 0.1%, and its antiviral activity was dependent on the concentrations of the essential oil.** When Vero cells were treated with the essential oil before or after viral adsorption, no antiviral activity was found, which suggests that the antiviral activity of essential oils including lemongrass may be due to the direct interaction with virions.