

Carragelose[®]

An innovative virus blocker targeting respiratory infections



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Marinomed Biotech AG

Company Overview



Marinomed management and focus

Lean, public company with track record of successfully inventing, partnering and marketing products creating sustainable value for patients and stakeholders



Pascal Schmidt CFO, Eva Prieschl-Grassauer CSO, Cornelia Kutzer CBO, Andreas Grassauer CEO



Marinomed at a glance

Focus on two therapeutic areas: **Virology** and **Immunology**

Company

Founded
in 2006
First product on the
market in 2008
Marinomed IPO
in 2019

Unmet medical need

Focus on rare diseases
such as herpetic stromal
keratitis
Committed to transforming
the
lives of people living with
diseases with limited
or no treatment
options

Sustainable therapies

Increase of solubility and
improved bioavailability
allows significant reduction of
API resulting in reduced
environmental
contamination.
Antiviral drugs based
on renewable raw
materials

Successful partnering

Virology:
6 products with >25 M units
sold in 40+ countries
Immunology:
First licence deal
Solv4U: performs feasibility
studies for external
partners



Carragelose[®]

What is it?



Carragelose® Virus Blocker

Safe active ingredient for the portfolio with Carragelose®

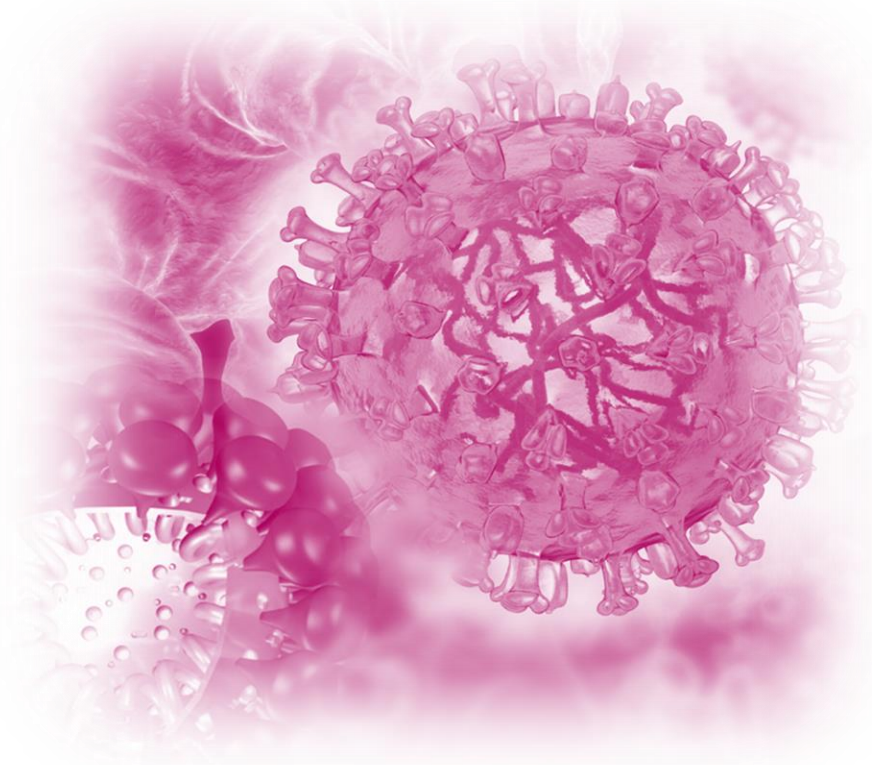
- Carragelose is iota-carrageenan, a **natural extract from red seaweed**
- Carragelose is the first **broadly active causative treatment** of colds and viral infections of the upper respiratory tract
- Carragelose is the active ingredient of multiple marketed products: Nasal sprays, throat spray, lozenges (currently more than 40 countries)
- Additional products: inhalation solution (in development), Combination of Carragelose with xylometazoline (in registration)
- The use of Carragelose is **patent protected**
- Carragelose has **GRAS status** (generally recognized as safe)
- **Favourable safety profile** - may be used in children older than one year as well as pregnant and breastfeeding women
- Clinically proven to **reduce viral load, shorten the duration and intensity of common cold symptoms** and **reduce the resurgence** of virus-related symptoms



Carragelose[®] broadly active virus blocker

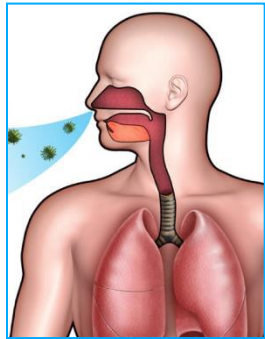
These viruses infect the respiratory tract and may worsen diseases such as COPD

Virus type	In-vitro data	In-vivo data	Clinical data
Corona virus (OC43, 229E)	✓		✓
SARS-CoV-2	✓		✓
Rhinovirus A and B	✓		✓
Influenza A virus: human pathogenic	✓	✓	✓
Influenza A virus: bird flu	✓	✓	
Influenza B virus	✓		✓ (patients with Flu B were recruited, but low number)
Respiratory syncytial virus	✓		✓ (patients with RSV were recruited, but low number)
Parainfluenza virus	✓		✓ (patients with PIV were recruited, but low number)
Metapneumovirus			✓ (patients with MPV were recruited, but low number)
Adenovirus	✓		
Coxsackievirus A10	✓		

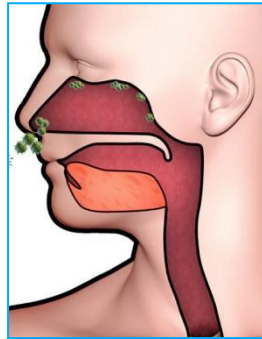


Unique Mode of Action

Carragelose® blocks viral attachment to cells via an unspecific physical mechanism



Colds are caused by more than 200 different respiratory viruses



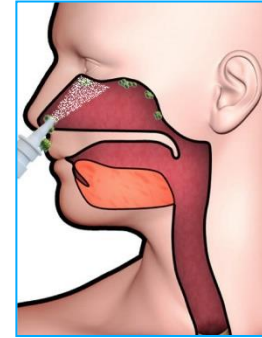
Cold viruses bind to the surfaces of the upper respiratory tract, initiating the infection



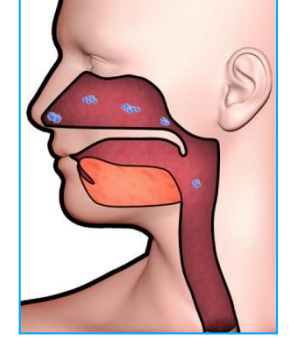
Carragelose®



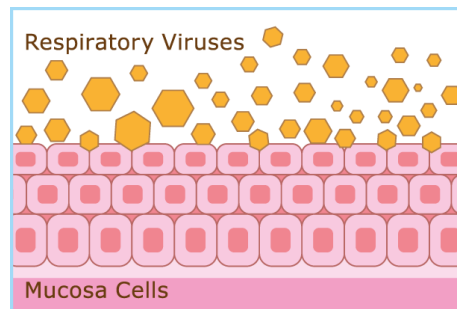
Preservative- and sugar-free. Can be used from an age of 1 year as well as during pregnancy and lactation



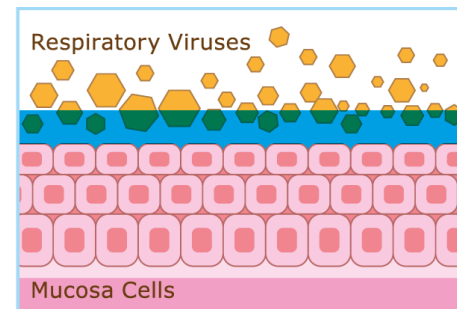
Carragelose® creates a protective layer that reduces the spreading and proliferation of the common cold virus



Clotted viruses leave the body via the natural route → cold is either prevented or is significantly shorter in duration

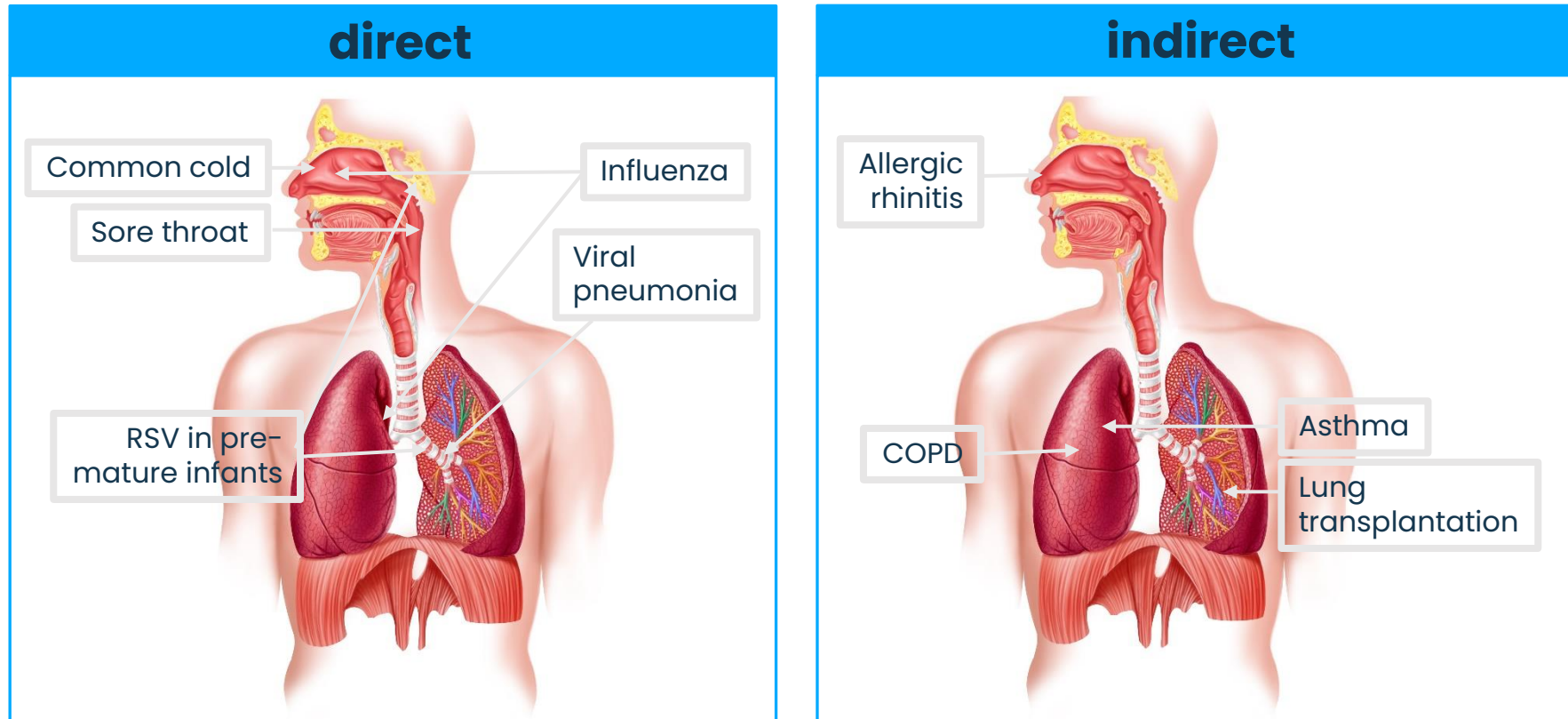


Carragelose®



Virus associated indications

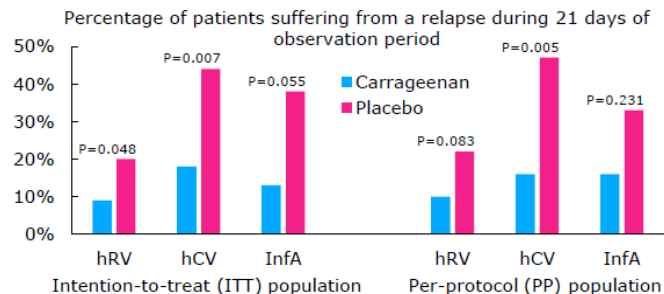
means diseases that are potentially worsened due to respiratory viral infections



Clinically validated as therapy

Efficacy of Carragelose® platform has been clinically proven in children and adults

- 4 Double-blind, placebo-controlled clinical trials in a natural setting conducted with Carragelose
- 650 Patients enrolled of which >150 children with an average age of four years
- 1.2 mg/ml Carragelose, 0.5% NaCl in water three times daily versus a placebo saline nasal spray
- 0.009 p-value of reduction of viral load in nasal lavages, symptoms of common cold reduced with p = 0.046
- 0 Treatment related serious adverse events and withdrawals due to adverse event development



The average duration of common cold disease in patients of different virus subgroups in days (* P<0.05, ** p<0.01)

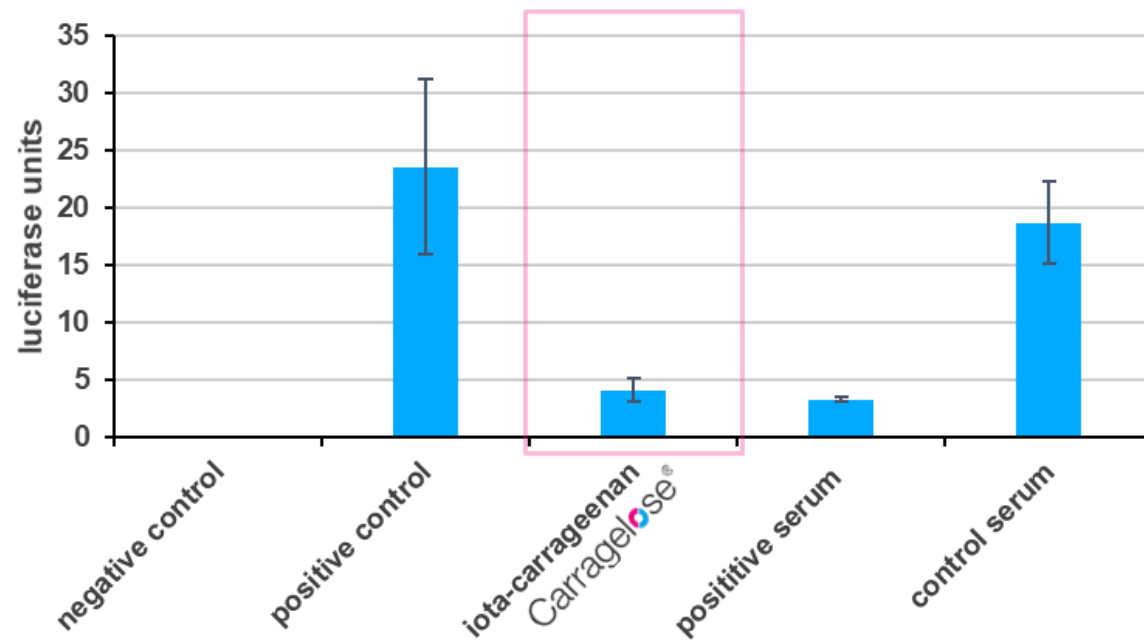
Patients	Group	hRV (days)	hCV (days)	InfA (days)
ITT	Carrageenan	8.8 ± 0.6	9.02 ± 0.7	8.7 ± 1.0
	Placebo	10.7 ± 0.7	12.95 ± 0.99	12.0 ± 1.2
	Difference	1.9*	3.9**	3.3*
PP	Carrageenan	8.7 ± 0.7	9.1 ± 0.7	9 ± 1.1
	Placebo	10.5 ± 0.8	12.2 ± 1.1	10.7 ± 1.5
	Difference	1.8 days*	3.1 days**	1.7 days

Carragelose® → clinically proven to significantly reduce duration of disease, viral load and relapses was shown



SARS-CoV-2

In vitro and clinical results show effectiveness of Carragelose



Carragelose is highly active in a virus neutralization assay.

The results show that Carragelose prevents the infection of cells in the same way as a human serum with antibodies against SARS-CoV-2 („positive serum“ from a COVID-19 patient in the graph on the left).

Independent studies in USA / Argentina showed that SARS-CoV-2 is reduced by more than 99.99% with 6 µg/ml Carragelose (1:200 diluted compared to nasal spray).

A clinical study with 394 health care workers showed a significant protection by prophylactic treatment with iota-carrageenan (nose): placebo group with 5% infection, verum with 1% ($p < 0.01$)



Clinically validated as prophylaxis

Efficacy of iota-carrageenan platform has been clinically proven in healthcare personnel







- 1 Double-blind, placebo-controlled clinical trial healthcare personnel working with COVID patients
- 394 Participants enrolled
- 4 Times daily applied as nasal spray
- 0.01 p value of reduction number of infections: 5.1% infected in placebo group, 1% in verum group
- 2 Additional studies ongoing in Austria and UK

Virus-blocking effectiveness of Carragelose was confirmed. Significant reduction of the duration of the disease, the viral load and relapses was shown.



Launched Carragelose® Products

Existing product portfolio with product brand names as they appear in Austria

	Coldamaris pro	Coldamaris pro junior	Coldamaris plus	Coldamaris lozenges	Coldamaris throatspray	Coldamaris akut
Regulatory status	Medical device IIa	Medical device IIa	Medical device IIa	Medical device IIa	Medical device IIa	Medical device Is
Active ingredient/s	1.2 mg/ml Carragelose	1.2 mg/ml Carragelose	1.2 mg/ml Carragelose 0.4mg/ml κ-Carrageenan	10 mg Carragelose	1.2 mg/ml Carragelose	1.2 mg/ml Carragelose 0.4mg/ml κ-Carrageenan 7% Sorbitol
Patient population	Adults and children 1y+	Children 1y+	Adults and children 1y+	Adults and children 6y+	Adults and children 1y+	Adults and children 1y+
Spray volume	140 µl/puff	50 µl/puff	140 µl/puff	N.a.	140 µl/puff	140 µl/puff
Claim(s)	<ul style="list-style-type: none"> - Prophylactic & supportive treatment of viral infections of respiratory tract - Can shorten the duration of common cold and resurgence of virus-related cold symptoms - Can be used additionally for the prevention and sustainable moistening of the nasal mucosa and thus for prophylactic and supportive treatment of all complaints resulting from dry or irritated nasal mucosa 		<ul style="list-style-type: none"> - For prevention and supportive treatment of viral infections of the upper respiratory tract - For prevention and treatment of all complaints resulting from dry or irritated oral and pharyngeal mucosa 		<ul style="list-style-type: none"> - Clears blocked nose during common cold / flu-like illnesses caused by viruses, allergic or non-allergic rhinitis and sinusitis - Can shorten the duration of common cold / flu-like illnesses, reduce the severity of cold symptoms and can reduce new infections and resurgence of virus-related cold symptoms 	
	<ul style="list-style-type: none"> - Alleviate severity of cold symptoms - Can reduce new infections 		<ul style="list-style-type: none"> - Can shorten duration of flu-like illnesses and alleviate severity of cold symptoms - Can reduce new infections 	<ul style="list-style-type: none"> - For moistening mouth and throat in case of e.g. cough, hoarseness - Can be used for prevention and supportive treatment of common cold / flu-like illnesses 	<ul style="list-style-type: none"> - For moistening the oral and pharyngeal mucosa in case of e.g. cough, hoarseness caused by e.g. smoking, singing or prolonged speaking 	
Austrian product version						



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