

Figure S2. Molecular weight (MW) distribution of iota-carrageenan using size exclusion chromatography (SEC). The MW distribution of highly pure iota-carrageenan was determined using SEC. As carrageenan standards with a defined size are not commercially available, dextran standards (1100, 50, 25 kDa) were applied. The carrageenan peak was split into two peaks at the medium retention times of the 25 and 50 kDa dextran standard (15.22 and 14.78 min, shown by a pink and blue line). The resulting peak areas of the small molecular weight fractions, i.e. peak areas at retention times higher than the retention time of the corresponding dextran standard, were set into relation to the total carrageenan peak area. The ratio of carrageenan with a molecular weight of smaller than 50 and 25 kDa is 2.33 and 0.76 %, respectively. Kappa- and lambda-carrageenan were analyzed accordingly; both have a MW of > 670kDa.

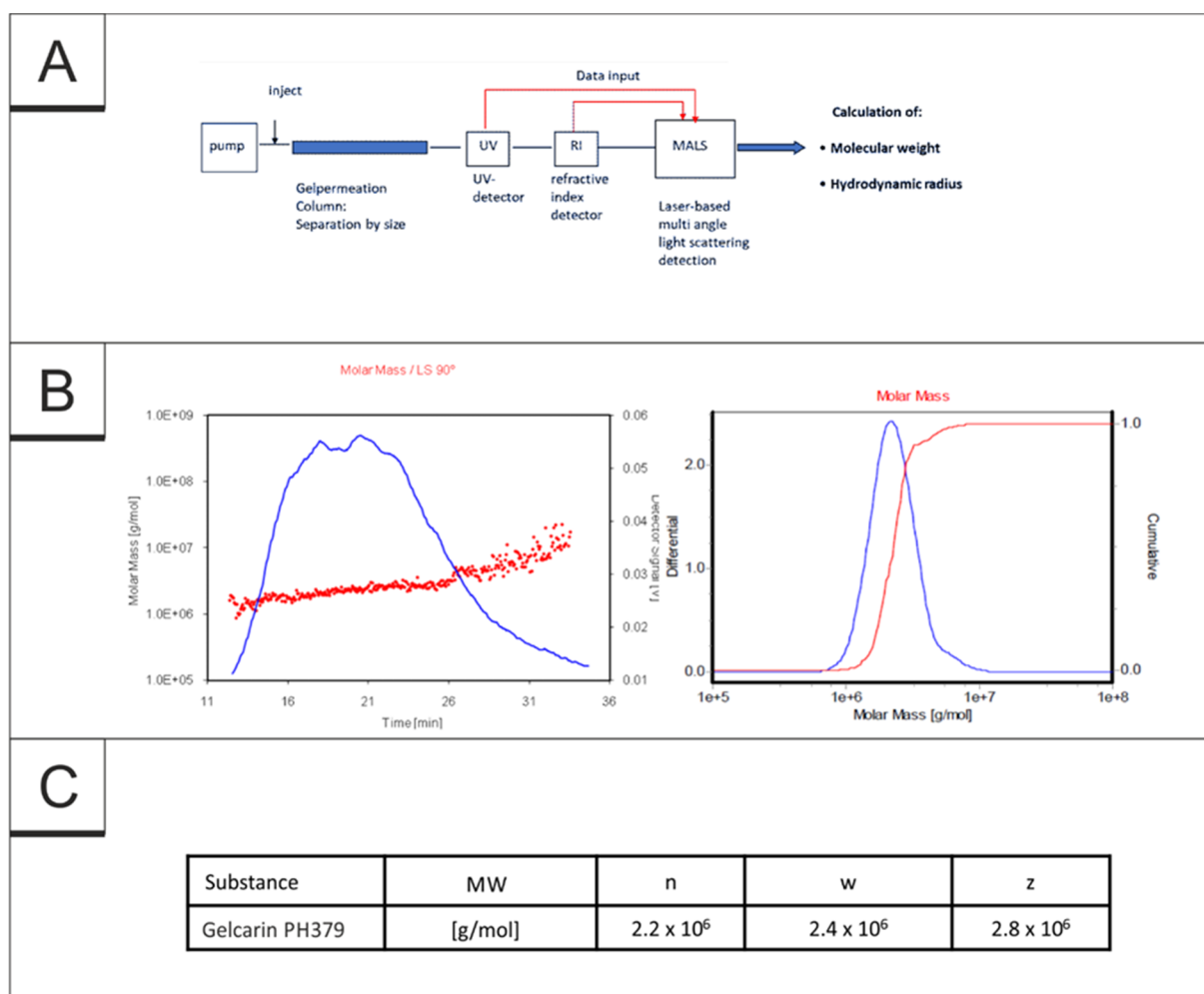


Figure S3. Molecular weight (MW) determination of iota-carrageenan by gel permeation HPLC and dynamic light scattering. Schematic structure of MW determination by gel permeation HPLC and light scattering (A). Molecular weight (red dots) of iota-carrageenan (Gelcarin PH379) dissolved in 0.5% NaCl plotted against the elution time. The 90° light scattering signal is shown in blue (B, left panel). Differential (blue line) and cumulative (red line) molecular mass of iota-carrageenan dissolved in 0.5 % NaCl (B, right panel). A sample of iota-carrageenan with typical molecular weight distribution (C). Three different averages for the radii and the molar masses were determined. They differ in their weighting factors, indicated by “n” = number average (weighting factor is proportional to the number of particles), “w” = weight or mass average (arbitrary mass average if measuring an unseparated sample with static light scattering), and “z” = average from the ultracentrifuge (UZ) technology. The molar mass was calculated based on the literature value for the refractive index increment of 0.148 ml/g. The average MW distributions of the sample were between $2.2 - 2.9 \times 10^6$ g/mol. Iota-carrageenan does not contain material < 100000 g/mol.

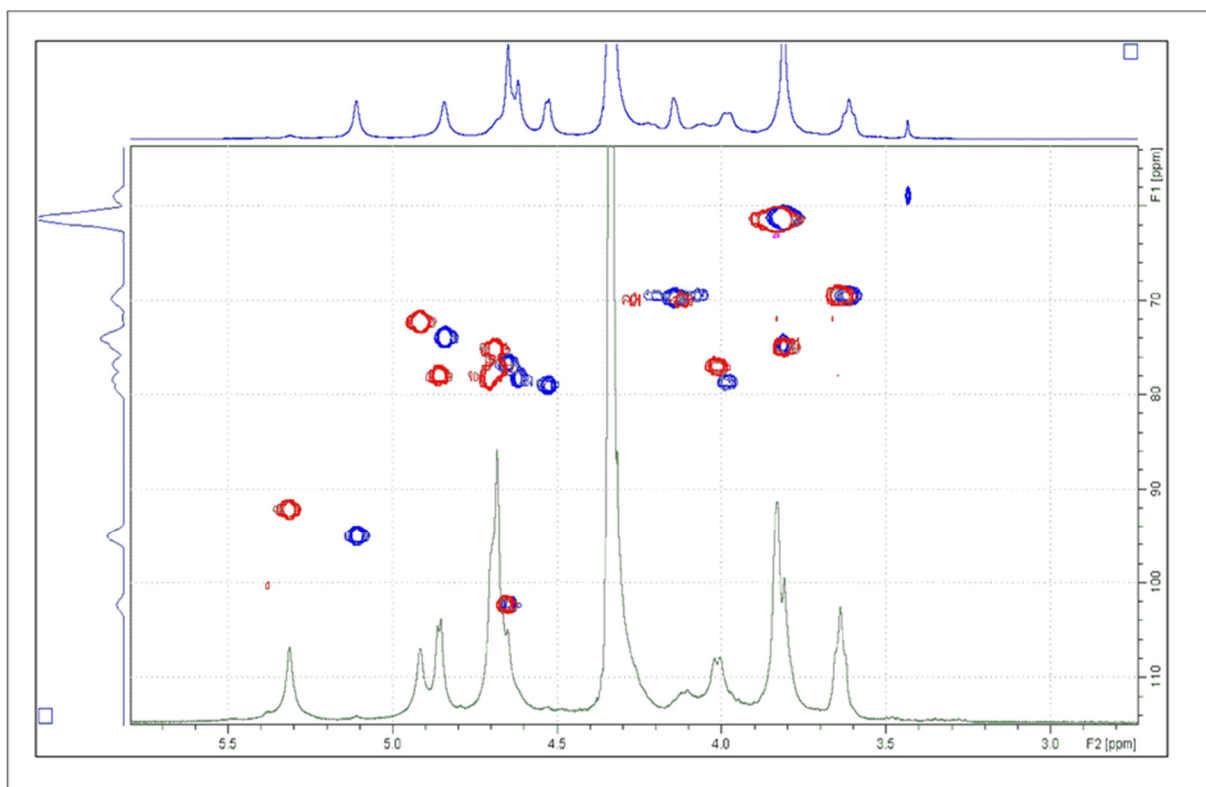


Figure S4. Identification and purity analysis of iota-carrageenan by 2D ¹H NMR spectroscopy. HSQC-NMR-Spectra of kappa- (blue) and iota- (red) carrageenan were recorded at 70°C.

Country	Nasal Spray (iota-carrageenan)	Nasal Spray Children (iota-carrageenan)	Nasal Spray (iota- and kappa-carrageenan)	Nasal Spray decongestant (iota- and kappa-carrageenan)	Throat Spray (iota-carrageenan)	Lozenges (iota-carrageenan)
Australia	Betadine Cold Defence Nasal Spray		FLO Travel Nasal Spray			
Austria	Coldam aris prophylactic Nasenspray, Carravir Protect Nasen-	COLDAMARS prophylactic Junior Nasal Spray	Coldam aris Plus Nasal Spray	Coldam aris akut Nasenspray	Coldam aris Rachenspray	Coldam aris Pastillen
Bahrain	Betadine Cold Defence Nasal Spray	Betadine Cold Defence Children's Nasal				
Belgium				Physiom er Virus Defense		
Bulgaria			GripVis Nasal Spray		GripVis Throat Spray	GripVis Lozenges
Denmark			Viruseptin Nose Spray	Viruseptin Decongestant Spray, Physiom er Virus Defense	Viruseptin Throat Spray	Viruseptin Lozenges
Estonia			Agovirax Nasal Spray			
Finland			Viruseptin Nose Spray	Physiom er Virus Defense	Viruseptin Throat Spray	
France				Phytosun Stop Virus		
Germany		Algovir Kinder	Algovir Effekt			
Greece			lovir	lovir Plus+ Nasal Spray	lovir Throat Spray	
Hungary		Carrevir Kid Orrspray	Carrevir Orrspray			
Indonesia	Betadine Cold Defence Nasal Spray	Betadine Kids Cold Defence Nasal Spray				
Iran	Coldam aris prophylactic Nasal Spray	COLDAMARS prophylactic Baby Nasal Spray	Coldam aris Flu		Coldam aris Throat Spray	
Ireland				Lem sip First Signs		
Israel	Betadine Cold Defence Nasal Spray					
Italy	Lontax Pro	Lontax Pro Junior	Lontax Plus	Physiom er Virus Defense	Lontax Gola Spray Orale	Lontax Gola Caram elle
Kuwait	Betadine Cold Defence Nasal Spray	Betadine Cold Defence Children's Nasal Spray				
Latvia			Agovirax Nasal Spray			
Lebanon	Betadine Cold Defence Nasal Spray	Betadine Cold Defence Children's Nasal Spray				
Lichtenstein				ProSens Nasenspray protect & relief		
Lithuania			Agovirax Nasal Spray			
Malaysia	Betadine Cold Defence Nasal Spray	Betadine Kids Cold Defence Nasal Spray				
Moldova			GripVis Nasal Spray			
New Zealand			FLO Travel Nasal Spray			Viruseptin Lozenges
Norway			Viruseptin Nose Spray	Physiom er Virus Defense		
Oman	Betadine Cold Defence Nasal Spray	Betadine Cold Defence Children's Nasal Spray				
Philippines	Betadine Cold Defence Nasal Spray	Betadine Kids Cold Defence Nasal Spray				
Quatar	Betadine Cold Defence Nasal Spray	Betadine Cold Defence Children's Nasal Spray				GipVis Lozenges
Romania			GripVis Nasal Spray		GripVis Throat Spray	
Russia			Quixx Barrier Nasal Spray			
Saudia Arabia	Betadine Cold Defence Nasal Spray	Betadine Cold Defence Children's Nasal Spray				
Singapore	Betadine Cold Defence Nasal Spray	Betadine Kids Cold Defence Nasal Spray				GripVis Lozenges
Slovakia			GripVis Nasal Spray		GripVis Throat Spray	Viruseptin Lozenges
Sweden			Viruseptin Nose Spray	Viruseptin Decongestant Spray	Viruseptin Throat Spray	
Switzerland			ProSens protect Nasenspray	ProSens Nasenspray protect & relief	ProSens Rachenspray	
Thailand	Betadine Cold Defence Nasal Spray	Betadine Kids Cold Defence Nasal Spray				
United Arab Emirates	Betadine Cold Defence Nasal Spray	Betadine Cold Defence Children's Nasal Spray				
United Kingdom			Dual Defence	Lem sip First Signs		
Vietnam	Betadine Cold Defence Nasal Spray	Betadine Kids Cold Defence Nasal Spray				

Figure S5. Worldwide approved iota-carrageenan containing products (nasal sprays, throat sprays, lozenges).