

BHM® Anti-Viral Nasal Spray NoriZiteTM Nasal Spray

2022

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BHM® Anti-Viral Nasal Spray

Protect, Capture, Prevent

- ✓ An easy-to-use nasal device
- Helps to protect against inhalation of infectious virus, transmitted primarily by the airborne route.
- Contains a novel formula tailored for greater and long-lasting protection
- Carry out your daily activity with an added layer of protection and peace of mind.



Intended use

Many viruses including SARS-CoV-2 are transmitted person-to-person, primarily via airborne droplets released through breathing, coughing, sneezing or talking. The nasal cavity then represents one of the major routes for viral entry into the body. In addition, during early-onset, viral load is believed to be highest in the nose. [1-2]

The **BHM®** Anti-Viral Nasal Spray is designed to work by **encapsulating** and **deactivating** the virus while it is still in the nose, preventing its wider uptake by the body. The spray should help prevent person-to-person transmission, which usually occurs by infected people shedding active viruses

The mechanism of action is purely physical!!



Competitors overview

		Active targeting		Passive protection -Carrageenan based nasal sprays			
Product	VIRALEZE™	TaffiX [®]	FabiSpray (SaNOtize)	Coldamaris Prophylactic, Nasitrol®, Betadine® Cold Defense, Boots Dual Defencenasal sprays			
Origin	Australia, Starpharma	Israel, Nasus Pharma	Canada, SaNOtize Research & Development Corp.	Marinomed is the IP holder of Carregelose®	United Kingdom, University of Birmingham		
Published data	No human trial results published, efficacy data is for in- vitro experiments	Claimed to have prevented COVID-19 spread at a religious event in Israel but is not a controlled scientific study	Phase III Trials completed with positive results	Several publications and completed/on-going multicentred, randomized clinical trials for common cold and flu-like diseases initially and have expanded to COVID-19. ^[5]	In vitro experiments prove significantly enhanced sprayability compared to other sprays and showed antiviral efficacy against SARS-CoV-2 and some variants. Formulated using compounds widely approved.		
Regulatory Approval/Notes	[1] Australian TGA has fined Starpharma \$93,000 over 'illegal	Spain's medical regulator, the Agency for Medicines and Health Products (AEMPS), has banned its sale on the basis there was 'not enough clinical evidence'. [3] The UK MHRA also withheld approvals	Obtain market approval in India through accelerated process. [4] Seeking emergency approval in Canada and the UK	Carregelose® products marketed in Europe, parts of Asia, Canada, and Australia. ^[6] Nasitrol is the only nasal spray based on iota carrageenan available in the US.	Registered in the UK, Europe, USA, Singapore, Hong Kong, and Thailand. Registrations in Australia, Malaysia, Ghana, and LATAM are in process.		
Viral Prevention Action	The antiviral active, SPL7013, is a microbiocide, meaning the spray breaks down the virus and disables it by chemical action	The main chemical ingredient, Hypromellose, is often used as an antiseptic before surgery. It is a biocide that creates an acidic coating on the inside of the nose	Treatment is based on nitric oxide, a nanomolecule with antimicrobial properties	Uses carrageenan as a main inhibitor	Uses carrageenan as a main inhibitor and added gellan to increase usability. Carrageenan on its own will cause dripping of the nose. The blended spray covers 6 times more area per spray, sticks to the mucosa and enhances activity in vitro, making the effects last longer		
Format	Liquid (may drip out of the nasal cavity quickly)	Liquid (may drip out of the nasal cavity quickly)	Liquid (may drip out of the nasal cavity quickly)	Liquid (may drip out of the nasal cavity quickly)	Higher viscosity formulation that would be held in place on the near vertical surfaces inside the nose rather than dripping out.		
Other	Pulled from the shelves	Pulled from the shelves			Launch in Singapore and Hong Kong in May 2022		

^[1] https://www.bioworld.com/articles/508600-starpharma-halts-sales-of-covid-19-antiviral-spray-viraleze-in-the-uk-following-mhra-rebuke?v=preview

^[2] https://www.theaustralian.com.au/breaking-news/starpharma-fined-93000-for-viraleze-nasal-spray-over-illegal-advertising/news-story/90034d642e911f56b180e4847c0eb835

^[3] https://www.dailymail.co.uk/news/article-9368071/Spanish-regulators-BAN-51-nasal-spray-studies-cut-risk-catching-Covid.html

^[4] https://www.pharmaceutical-technology.com/news/glenmark-nasal-spray-covid-india/

^[5] https://www.carragelose.com/en/publications

^[6] https://www.carragelose.com/en/portfolio/launched-products

Carrageenan-based nasal sprays for common cold and flu-like diseases

- Carrageenans (kappa-, iota-, and lambda-) have demonstrated efficacy in vitro against numerous RNA and DNA viruses causing human respiratory disease including influenza, rhinovirus, and coronavirus and SARS-CoV-2.^[1]
- Marinomed Biotech AG, an Austrian science-based biotech company, is holder of the IP rights of Carragelose® nasal spray containing iota-carrageenan and has licensed Carragelose® for marketing in Europe, parts of Asia, Canada, and Australia.^[2]
- Carrageenan formulated into a nasal spray has already been proven effective (i.e. reduced severity and duration of symptoms and/or reduced viral load) in common cold treatment, shown in 5 clinical trials.^[3]
 - 4 in Austria using Coldamaris Prophylactic® Nasal Spray
 - 1 in the UK using Bisolviral® Nasal Spray licensed to Boehringer Ingelheim which is no longer available in the market)

^{[1]:} Frediansyah A. Clin Epidemiol Glob Health. 2021;2:100826.

^{[2]:} https://www.carragelose.com/en/portfolio/launched-products

^{[3]:} a) Eccles R. et al., Respiratory Research 2010, 11; b) Eccles R. et al., Respiratory Research 2015, 16, 121; c) Fazekas T. et al., BMC Complementary and Alternative Medicine 2012, 12, 147; d) Koenighofer M. et al., Multidisciplinary Respiratory Medicine 2014, 9, 57; e) Ludwig M. et al., Respiratory Research 2013, 14.

Carrageenan-based nasal spray exhibits prophylactic efficacy in preventing SARS-CoV-2 infection

- In an interim report of a trial conducted in Argentina, a nasal spray with iota-carrageenan (Nasitrol® nasal spray) showed significant efficacy in the prevention of COVID-19 in hospital staff who manage patients with this disease.^[1] The percentage of participants that developed COVID-19 was significantly lower in the group that received the iota-carrageenan spray compared to placebo (1.0 % vs. 5.1 %, respectively) and reduced COVID transmission among ICU staff by nearly 80%.
- Two more trials are running on COVID-19 cases in the UK ^[2] (Coldamaris Plus, marketed as Boots Dual Defence in the UK) and in Austria ^[3] (Coldamaris Prophylactic), investigating the prophylactic and therapeutic effect of iota-carrageenan containing nasal sprays for health care workers.

^{[1]:} FigueroaJ. M. et al., Int J Gen Med 2021, 14, 6277.

^{[2]:} https://clinicaltrials.gov/ct2/show/results/NCT04590365

^{[3]:} https://clinicaltrials.gov/ct2/show/NCT04681001

What is unique about the BHM® anti-viral nasal spray?

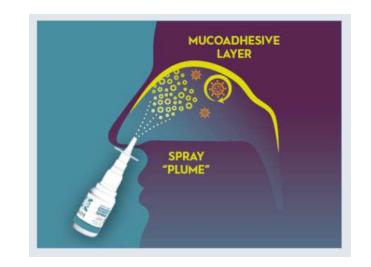
Patented novel formulation tailored to achieve well-distributed yet greater coverage

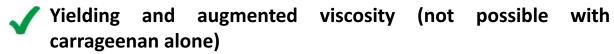
The BHM® anti-viral nasal spray contains **NoriZite**TM, consisting of two naturally occurring polysaccharides: **Carrageenan** and **Gellan gum**.

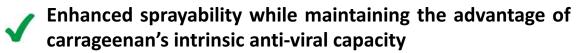
Carrageenan has a broad spectrum of anti-viral properties. Gellan gum has never been used in nasal sprays and is initially approved as food additive, and has subsequently been approved for wide non-food, cosmetic and pharmaceutical uses by many countries including the USA and EU.

Gellan gum can 'plume' rather than 'jet' when applied with a typical nasal spray applicator and is retained on the mucous-coated epithelia in the nose where it coats and retains the virus, so it does not travel further down the respiratory tract.

The blended combination has enhanced spray characteristics to improve both surface coverage and muco-adhesion, prolonging residence time in the nasal cavity for longer lasting protection. [1] Research published by the University of Birmingham has confirmed that the formulation containing the gellan system covers a surface area that is six times greater than without the gellan.

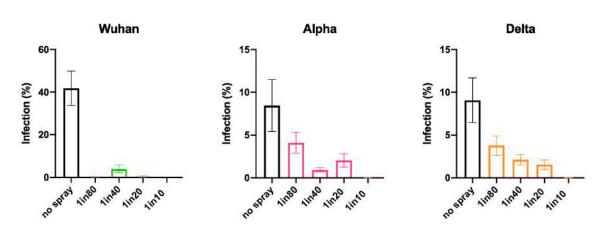






NoriZite[™] formulation showed completed inhibition of SARS-CoV-2 infection *in* vitro - not only prophylactic capacity, but the ability to prevent viral transmission

Laboratory data have confirmed the NoriZiteTM formulation can prevent infection of cells in culture with SARS-CoV-2.^[1] Gellan gum enhances the efficacy of the carrageenan at high levels of dilution, which should mean that it is effective for longer. The composite demonstrated synergistic behaviours in which the blend has a more potent anti-viral effect.



In a follow up *in vitro* study, Vero cells were treated with BHM® anti-viral nasal spray in a range of dilutions prior to virus infection. The nasal spray is effective against **SARS-CoV-2** and its two **infectious variants of SARS-CoV-2** (namely the Alpha (B.1.1.7) and the Delta (B.1.617.2)) in cell culture.^[2] Research is also underway to demonstrate the efficacy of the spray in other SARS-CoV-2 variants and other airborne viruses.

^[1]: Moakes R., et al. Adv Mater. 2021;33(26):2008304.

^{[2]:} On-going studies; data not published.

Product approval and registration status

UK MHRA

Medicines & Healthcare products
Regulatory Agency

Application reference: 2022041102256557

Manufacturer organisation: Birmingham Biotech LTD

Address:

29-31 Castle Street High Wycombe HP13 6RU England, United Kingdom

Manufacturer registration status: Registered

US FDA



FDA Thailand



EU



La notificación se ha realizado correctamente.

Datos de	registro
Código de Expediente:	RP5/9/2022
Fecha Registro:	05/01/2022 03:27:06
Nº registro General:	RPS/9/2022
Oficina:	ETEL
Nº registro Oficina:	RPS/9/2022

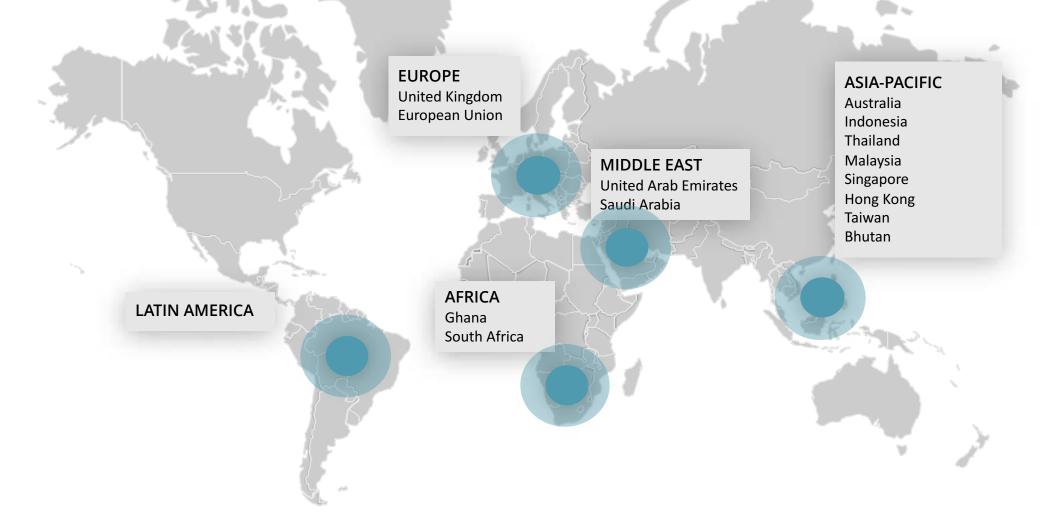
YHSA Singapore HSA

	Dealer's Licence No	Dealer's Name	Dealer's Type	Product Owner Name	Name as per Device Label	Intended Purpose	TOTAL STREET	UDI-DI	DM-DI		f Sterile/No u n-sterile
1.	ES0501638	PURE PHARM PTE LTD	Importer	Birmingha m Blotech LTD	Nasal Spray	Nasal spray capable of slowing or preventing viral infection through the nasal cavity.		507000053 2707		United Kingdom	Non-sterile

Registrations in other countries/regions are in process (e.g. Australia, Taiwan, Malaysia, Vietnam, Philippines, South Africa, Ghana, Middle East and LatAm).

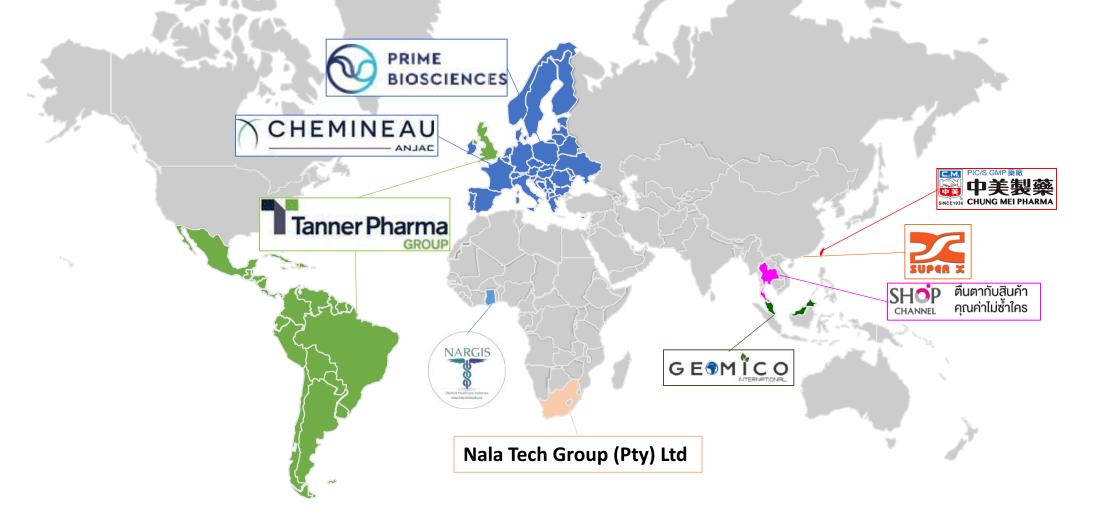
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WE WORK WITH GLOBAL PARTNERS FOR PRODUCT DISTRIBUTION



OUR PARTNERS

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Our partner in Taiwan - Chung Mei Pharmaceutical



Founded in 1936, Chung Mei's business scope ranges from manufacturing to end-user sales, and the integration of biotechnology medical research and development to sales channel management. Chung Mei has a stronghold in the Taiwan market, with thousands of distribution channels domestically.

Through the international standard cGMP, PIC/S GMP and ISO 22000 certifications, Chung Mei is able to expand sales to international markets into China, ASEAN countries, Macau, Hong Kong and other regions, as well as distributing Japanese branded products. In 2011, Chung Mei received highest national award in the western medicine biotech category from the Institute for Biotechnology and Medicine Industry (IBMI) and strives to produce excellent quality control.



SELECTED MEDIA COVERAGE

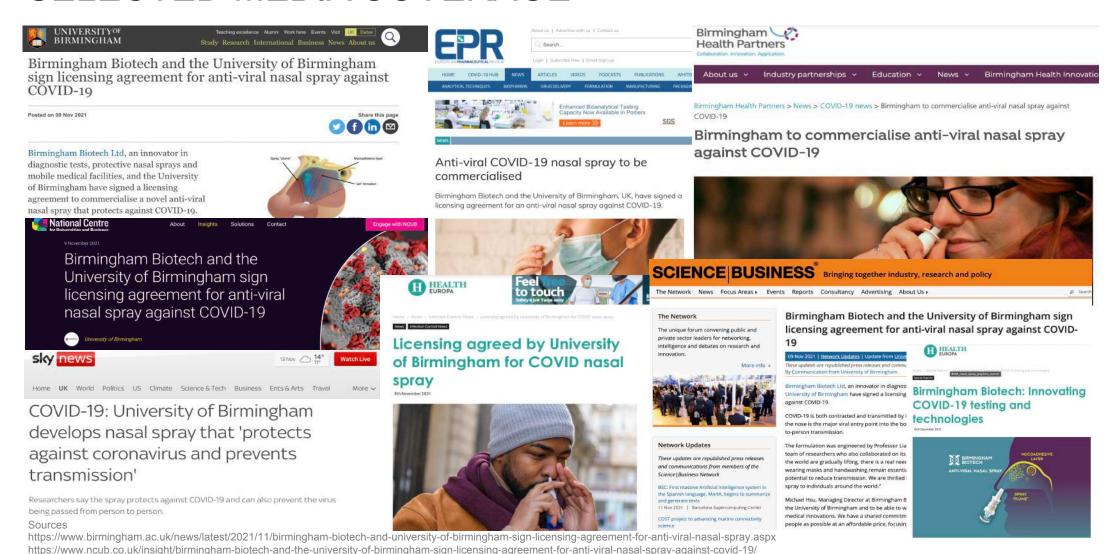
https://news.sky.com/story/covid-19-university-of-birmingham-develops-nasal-spray-that-protects-against-coronavirus-and-prevents-transmission-12136189

https://www.europeanpharmaceuticalreview.com/news/165186/anti-viral-covid-19-nasal-spray-to-be-commercialised-in-birmingham/

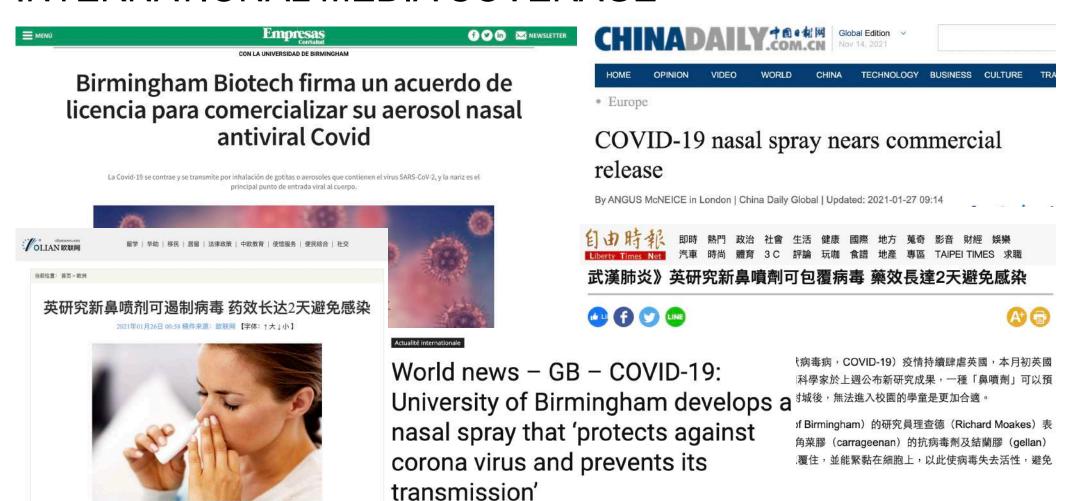
https://sciencebusiness.net/network-updates/birmingham-biotech-and-university-birmingham-sign-licensing-agreement-anti-viral

https://www.healtheuropa.eu/licensing-agreed-by-university-of-birmingham-for-covid-nasal-spray/111599/https://www.birminghamhealthpartners.co.uk/birmingham-to-commercialise-anti-viral-nasal-spray-against-covid-19/

https://www.healtheuropa.eu/birmingham-biotech-innovating-covid-19-testing-and-technologies/112339/



INTERNATIONAL MEDIA COVERAGE



https://www.consalud.es/ecsalud/internacional/birmingham-biotech-firma-acuerdo-licencia-comercializar-aerosol-nasal-antiviral-covid_105071_102.html https://news.ltn.com.tw/news/world/breakingnews/3421996

http://www.oliannews.com/eu/2021/01-26/352632.shtml

英研究新鼻喷剂可遏制病毒

https://global.chinadaily.com.cn/a/202101/27/WS6010be6ba31024ad0baa553d.html

By CAMEROON MAGAZINE - GM - 19/11/2020

LAUNCH IN SINGAPORE



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BHM Anti-Viral Nasal Spray launches in Singapore

9 MAY 2022 08:50

Birmingham Biotech Ltd, an innovator in diagnostic tests, protective nasal sprays and mobile medical facilities, announces the Singapore launch of its latest technology, BHM Anti-Viral Nasal Spray.



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日期 | 2022-04-29

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撰文 記者 李林璎







@Guardian in Singapore

'BHM® Anti-Viral Nasal Spray' has been voted as a finalist for the Materials Innovation Award for the Med-Tech Innovation Awards 2022.



