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ASX Announcement

VIRALEZE SPL7013 virucidal against multiple COVID variants

- **Further antiviral testing has confirmed SPL7013 (VIRALEZE™ active) has potent virucidal activity against the Alpha (UK), Beta (South Africa) and Gamma (Japan/Brazil) variant strains of SARS-CoV-2 coronavirus**
- **The Alpha, Beta and Gamma variants of SARS-CoV-2 are all classified 'Variants of Concern' by international public health authorities due to their increased transmissibility, evidence of increased disease (COVID-19) severity, and/or reduced effectiveness of current treatments or vaccines[1]**
- **The broad-spectrum antiviral activity of VIRALEZE™ is an important advantage for the product, especially as new variants of SARS-CoV-2 continue to emerge and spread worldwide**
- **VIRALEZE™ broad-spectrum antiviral nasal spray is registered for sale in UK/Europe and India, available in the UK at LloydsPharmacy and other independent pharmacies, and available via www.viraleze.co**

Melbourne, Australia; 18 June 2021: Starpharma (ASX: SPL, OTCQX: SPHRY) today released new data demonstrating that SPL7013, the active in VIRALEZE™ antiviral nasal spray, achieved more than 99.9% reduction of virus against the **Alpha** (UK), **Beta** (South Africa) and **Gamma** (Japan/Brazil) SARS-CoV-2 coronavirus 'Variants of Concern' in laboratory-based virucidal assays.

The testing of SPL7013 was conducted in the laboratory of virologist Professor Philippe Gallay at The Scripps Research Institute in the US, where previous studies have demonstrated potent antiviral and virucidal activity of SPL7013 against multiple strains of SARS-CoV-2.[2]

SPL7013 virucidal activity against the Alpha, Beta and Gamma variants in the current assays were broadly consistent with the virucidal activity demonstrated in the US strain of SARS-CoV-2 (2019-nCoV/USA-WA1/2020) in the same assay. Within 30 seconds to 1 minute of exposure, SPL7013 achieved >99% reduction in infectious virus against Beta and Gamma variants, and >99.9% within 5 minutes, and for Alpha, >99.9% reduction in infectious virus within 30 seconds to 1 minute of exposure vs virus control.

These findings indicate comparable potency for SPL7013 against all three variants of concern Alpha, Beta and Gamma compared with original strains of the virus. The Delta (India/B.1.617.2) and Kappa (India/B.1.617.1) variants are planned to be tested when virus availability permits.

In commenting on the significance of these findings, internationally recognised microbiologist, Professor Philippe Gallay said:

"We are impressed with the rapid and potent virucidal and antiviral activity of SPL7013, and that it is highly active against the Alpha, Beta, and Gamma SARS-CoV-2 Variants of Concern that have emerged and recently dominated the pandemic.

"It is particularly exciting to see a product with this level of virucidal activity, especially against these Variants of Concern that are much more transmissible than earlier SARS-CoV-2 strains. The latest data are consistent with our previous data showing robust antiviral and virucidal

[1] https://www.cdc.gov/coronavirus/2019-ncov/variants/variant-info.html#Concern
[2] Paull J.R.A., et al. Virucidal and antiviral activity of astodrimer sodium against SARS-CoV-2 *in vitro*. *Antiviral Res* 2021;191:105089 (https://doi.org/10.1016/j.antiviral.2021.105089)

effects of SPL7013 against the US strain of SARS-CoV-2, and suggests a mechanism of action that is not impacted by mutations affecting the virus spike proteins."

Dr Jackie Fairley, CEO of Starpharma, commented: *"We are very pleased to see such potent and rapid virucidal activity of VIRALEZE™ against multiple SARS-CoV-2 variants of concern, Alpha, Beta, and Gamma. These variants continue to spread across the globe and challenge efforts to control the COVID-19 pandemic. Given its broad spectrum of activity, VIRALEZE™ could prove to be particularly beneficial as an additional protective measure against these variants. This could prove particularly useful in settings where these variants can be problematic, like hotel quarantine and major international events such as the Tokyo Olympics."*

SARS-CoV-2 Variants of Concern

The Alpha, Beta and Gamma variants are all classified as 'Variants of Concern' or interest by the UK public health authorities, the US Centers for Disease Control and Prevention (CDC) and the European Centre for Disease Prevention and Control (ECDC), due to certain attributes such as having increased transmissibility, evidence of increased disease severity (e.g., increased hospitalisations or deaths) and/or reduced effectiveness of current treatments or vaccines.[3]

The Beta variant, first identified in South Africa, has accounted for more than 90% of SARS-CoV-2 infections in South Africa, and epidemiologists have estimated that it is around 50% more contagious compared with the original SARS-CoV-2 virus/strain, based on its rapid spread.[4] The Beta variant, which has now appeared in at least 68 countries, has also been reported to impact on the efficacy of some vaccines and treatments. The British government is in discussions regarding a new vaccine to specifically address the Beta variant. [5,6]

Similarly, the Gamma variant, first detected in travelers from Brazil to Japan, has now been identified in at least 58 countries[7] and is associated with higher hospitalisation rates and increased breakthrough infections[8], and could pose a threat to global vaccine efforts.[9,10,11,12] There is also some early evidence that antibodies might not recognize the Gamma variant, which could lead to reinfection.[13] Accordingly, additional protective measures such as mask wearing, social distancing, and good hygiene will continue to play a particularly important role.

The demonstration of the potent activity in these problematic variants underscores a key benefit of VIRALEZE™ antiviral nasal spray. SPL7013 retention of activity in multiple coronavirus variants is thought to be due to its mechanism of action, which is not reliant on specific binding sites within the spike protein. The active in VIRALEZE™ acts by blocking the interaction between the SARS-CoV-2 viral 'spikes' and the human cells the virus is seeking to infect. This lack of reliance on specific binding sites within the spike protein could represent a major advantage for VIRALEZE™.

Starpharma has now reported data on the Alpha, Beta, Gamma variants of coronavirus SARS-CoV-2, as well as original strains of the virus from US, Europe, and Australia, providing

[3] https://www.cdc.gov/coronavirus/2019-ncov/variants/variant-info.html#Concern
[4] https://www.wsj.com/articles/the-new-covid-19-strain-in-south-africa-what-we-know-11609971229
[5] https://cov-lineages.org/global_report_B.1.351.html
[6] https://www.smh.com.au/world/europe/britain-in-negotiations-to-buy-first-vaccine-adapted-for-beta-covid-19-variant-20210603-p57xkr.html
[7] https://cov-lineages.org/global_report_B.1.351.html
[8] https://www.seattletimes.com/seattle-news/health/what-keeps-me-up-at-night-covid-19-gamma-variant-worries-washington-state-health-official/
[9] https://www.cdc.gov/coronavirus/2019-ncov/variants/variant.html?CDC_AA_refVal=https%3A%2F%2Fwww.cdc.gov%2Fcoronavirus%2F2019-ncov%2Ftransmission%2Fvariant.html
[10] https://www.cnbc.com/2021/01/11/japan-covid-variant-how-it-compares-to-strains-in-uk-south-africa.html
[11] https://www.cdc.gov/vaccines/covid-19/health-departments/breakthrough-cases.html
[12] https://www.cnbc.com/2021/01/11/japan-covid-variant-how-it-compares-to-strains-in-uk-south-africa.html

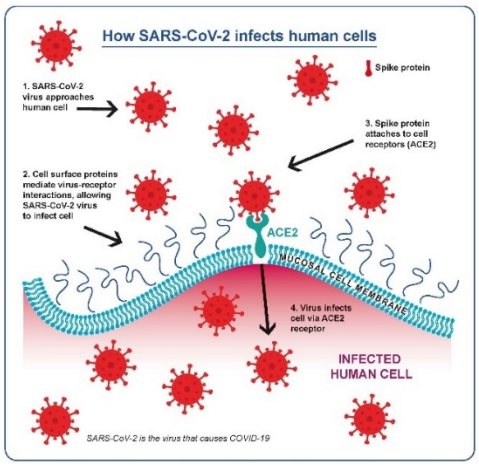
confirmation of the broad-spectrum and potent antiviral properties of SPL7013. These data are in addition to previously announced data for other pandemic causing coronaviruses, SARS-CoV and MERS-CoV, and other respiratory viruses, including respiratory syncytial virus (RSV) and influenza virus subtype, H1N1 or "Swine Flu".

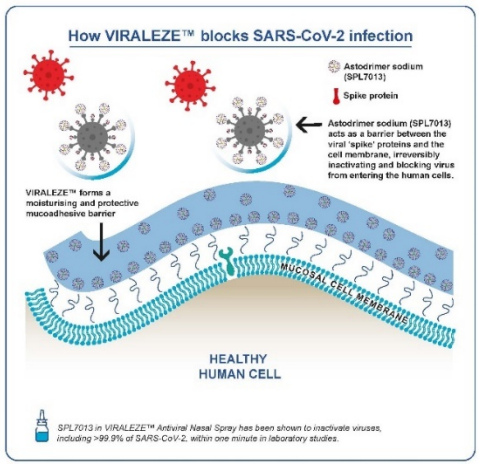
Extensive data on the antiviral and virucidal activity of astodrimer sodium (SPL7013) against SARS-CoV-2 is published in the prestigious international scientific journal, Antiviral Research.[2]

For more information on VIRALEZE™ visit www.viraleze.co.

How VIRALEZE™ works

VIRALEZE™ is the only nasal spray containing a specifically designed antiviral active that has previously been shown in virucidal assays in laboratory studies to irreversibly inactivate more than 99.9% of SARS-CoV-2 within one minute.[2] VIRALEZE™ targets the area in the nasal cavity where respiratory viruses that cause colds, flu, and more severe respiratory illness, such as COVID-19, first attach and start to multiply. The active in VIRALEZE™ acts by blocking the interaction between the SARS-CoV-2 viral 'spikes' and the human cells the virus is seeking to infect.





Experimental details

In this experiment, SPL7013 at concentrations ranging from 1.1 to 30 mg/mL was incubated with SARS-CoV-2 viruses for 30 seconds, 1 minute, 5 minutes or 30 minutes:

- Alpha (B.1.1.7) strain, hCoV-19/England/204820464/2020,
- Beta (B.1.351) strain, hCoV-19/South Africa/KRISP-K005325/2020,
- Gamma (P.1) strain, hCoV-19/Japan/TY7-503/2021, or
- US strain, 2019-nCoV/USA-WA1/2020

Following incubation, virus was pelleted to separate and neutralise SPL7013 in solution. Virus was then gently re-suspended and added to Vero-E6 cells for infection. After 6 hours, virus and compound were removed, and cells were left for multiple virus replication cycles. Supernatant was removed and assayed for the amount of infectious virus by plaque assay (plaque forming units/mL). Virus controls, which were not exposed to SPL7013, were run in parallel.

SPL7013 at 10 mg/mL resulted in >99.9% reduction in infectious virus compared with virus control within 30 seconds for the US and Alpha variants and within 5 minutes for the Beta and

Gamma variants. Percent reductions of infectious virus achieved with 10 mg/mL SPL7013 are shown in the table below.

Virus: SPL7013† Incubation Time	Percent Reduction of Infectious Virus vs Virus Control^			
	US	Alpha	Beta	Gamma
30 seconds	>99.9%	>99.9%	>99%	>99%
1 minute	>99.9%	>99.9%	>99%	>99%
5 minutes	>99.9%	>99.99%	>99.9%	>99.9%
30 minutes	>99.99%	>99.99%	>99.99%	>99.99%

† 10 mg/mL SPL7013; ^ virus without exposure to SPL7013

About VIRALEZE™ Antiviral Nasal Spray

VIRALEZE™ Antiviral Nasal Spray was developed by Starpharma (ASX: SPL) and is registered for sale in Europe and India. It is an easy-to-use antiviral nasal spray containing 1% w/w astodrimer sodium (SPL7013), shown in laboratory studies to inactivate respiratory viruses, including >99.9% of coronavirus SARS-CoV-2.[2]

VIRALEZE™ binds to and irreversibly inactivates a broad spectrum of respiratory viruses. Inactivated viruses are blocked from attaching to cells inside your nose and taking hold. In addition to providing a protective antiviral barrier, VIRALEZE™ provides a moisturising layer to help keep nasal tissue hydrated, protecting it from dryness and damage.

SPL7013 is included in products that are already approved in >45 countries and available for sale in the UK, Europe, Japan, South East Asia, South Africa, Australia, and New Zealand.

VIRALEZE™ can be used alongside vaccines, masks, and physical distancing.

Advantages of VIRALEZE™

- Broad-spectrum, works against multiple strains of SARS-CoV-2 and multiple respiratory viruses.
- Potent antiviral activity against multiple strains of SARS-CoV-2, including 'Variants of Concern', Alpha, Beta, Gamma.
- Virucidal, irreversibly and rapidly inactivating >99.9% of coronavirus/SARS-CoV-2 within one minute.[2]
- Ability to inactivate virus either before or after exposure.
- Contains a well-tolerated, already marketed active, which is not absorbed into the bloodstream.
- Provides a moisturising and protective barrier to help keep nasal tissue hydrated.
- Room temperature storage, easy and convenient for regular use.

Starpharma acknowledges the $1 million in funding for the development of VIRALEZE™ provided by the Australian Government's Medical Research Future Fund (MRFF) Biomedical Translation Bridge (BTB) Program, with support from UniQuest. Delivered by MTPConnect, the Australian Government's BTB program is a $22.3 million MRFF initiative that provides up to $1 million in matched funding to nurture the translation of new therapies, technologies and medical devices through to proof of concept to turn innovative medical ideas into reality.

About Starpharma

Starpharma Holdings Limited (ASX:SPL, OTCQX:SPHRY) is a global biopharmaceutical company and a world leader in the development of new pharmaceutical and medical products based on proprietary polymers called dendrimers, with programs for COVID-19, DEP® drug delivery and VivaGel®. Starpharma has developed VIRALEZE™, an antiviral nasal spray for COVID-19, which is complementary to vaccines and other preventative measures such as distancing and PPE. VIRALEZE™ is registered for sale in the UK/Europe and India, and available in the UK through LloydsPharmacy and elsewhere via www.viraleze.co. SPL7013 is utilised in approved products - the VivaGel® condom and VivaGel® BV. VivaGel® BV has been licensed in >160 countries, is approved in >45 countries and available for sale in the UK, Europe, Japan, South East Asia, South Africa, Australia and New Zealand.

As a leading company in dendrimer-based drug delivery, Starpharma's proprietary drug delivery platform technology, DEP®, is being used to improve pharmaceuticals, to reduce toxicities and enhance their performance. There are numerous internal and partnered programs underway to develop DEP® versions of existing drugs, particularly in the area of anti-cancer therapies. DEP® partnerships include oncology programs with AstraZeneca, with Merck in the area of Antibody Drug Conjugates (ADCs), with Chase Sun in the area of anti-infectives and other world leading pharmaceutical companies. Starpharma's partnered DEP® programs have the potential to generate significant future milestones and royalties.

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Disclosure
This ASX Announcement was authorised for release by the Chairman, Mr Rob Thomas.

Forward Looking Statements
This document contains certain forward-looking statements, relating to Starpharma's business, which can be identified by the use of forward-looking terminology such as "promising", "plans", "anticipated", "will", "project", "believe", "forecast", "expected", "estimated", "targeting", "aiming", "set to", "potential", "seeking to", "goal", "could provide", "intends", "is being developed", "could be", "on track", or similar expressions, or by express or implied discussions regarding potential filings or marketing approvals, or potential future sales of product candidates. Such forward-looking statements involve known and unknown risks, uncertainties and other factors that may cause actual results to be materially different from any future results, performance or achievements expressed or implied by such statements. There can be no assurance that any existing or future regulatory filings will satisfy the FDA's and other authorities' requirements regarding any one or more product candidates nor can there be any assurance that such product candidates will be approved by any authorities for sale in any market or that they will reach any particular level of sales. In particular, management's expectations regarding the approval and commercialization of the product candidates could be affected by, among other things, unexpected trial results, including additional analysis of existing data, and new data; unexpected regulatory actions or delays, or government regulation generally; our ability to obtain or maintain patent or other proprietary intellectual property protection; competition in general; government, industry, and general public pricing pressures; and additional factors that involve significant risks and uncertainties about our products, product candidates, financial results and business prospects. Should one or more of these risks or uncertainties materialize, or should underlying assumptions prove incorrect, actual results may vary materially from those described herein as anticipated, believed, estimated or expected. Starpharma is providing this information as of the date of this document and does not assume any obligation to update any forward-looking statements contained in this document as a result of new information, future events or developments or otherwise. Clinical case studies and other clinical information given in this document are given for illustrative purposes only and are not necessarily a guide to product performance and no representation or warranty is made by any person as to the likelihood of achievement or reasonableness of future results. Nothing contained in this document nor any information made available to you is, or shall be relied upon as, a promise, representation, warranty or guarantee as to the past, present or the future performance of any Starpharma product.