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Lexaria Drug Delivery Platform Enables up to Three-Fold Increase in Oral Delivery of Antiviral Drugs

DehydraTECH™ improves delivery into bloodstream of orally administered remdesivir and ebastine in study VIRAL-A20-2

KELOWNA, BC / ACCESSWIRE / June 15, 2021 / Lexaria Bioscience Corp. (NASDAQ:LEXX) (NASDAQ:LEXXW) (CSE:LXX) (the "Company" or "Lexaria"), a global innovator in drug delivery platforms, is pleased to announce positive results from its tolerability and pharmacokinetic ("PK") animal study VIRAL-A20-2, evaluating DehydraTECH-enabled remdesivir and ebastine.

These findings build upon Lexaria's recent announcement that remdesivir and ebastine processed with DehydraTECH were effective at inhibiting the COVID-19 SARS-CoV-2 virus using an *in vitro* screening assay in infected cells in its study VIRAL-C21-3.

"These are the best results Lexaria has ever generated demonstrating our technology's ability to more effectively deliver antiviral drugs when taken orally," said Chris Bunka, CEO of Lexaria. "We are starting to see circulating drug levels in the bloodstream that are twice or even three-times higher with DehydraTECH than without, which could greatly enhance opportunities to treat viral infections via oral drug delivery."

Drug	**Drug Class**	**Cmax** % Improvement** (ng/mL)	**Control** (ng/mL)	**AUClast*** % Improvement** (hr·ng/mL)	**Control** (hr·ng/mL)
Remdesivir ***(GS-441524)**	Nucleotide Reverse Transcriptase Inhibitor	54.5 ± 69.4 **110%** (p=0.11)	26.4 ± 8.9	218.3 ± 244.5 **82%** (p=0.12)	119.7 ± 35.5

Ebastine	MPro Inhibitor (a.k.a. 3CL Protease Inhibitor)	9.1 ± 5.7 **33%** (p=0.17)	6.8 ± 4.4	29.9 ±28.0 **204%** (p=0.027)	9.8 ±9.7

The gains in delivery for remdesivir and ebastine exceed those that Lexaria previously reported on December 1, 2020 for darunavir (35% gain) and efavirenz (42% gain), two other antiviral drugs investigated by Lexaria representative of two classes of antiviral therapies (a protease inhibitor and a reverse transcriptase inhibitor) under investigation against SARS-CoV-2/COVID-19 and already in use against HIV/AIDS.

Remdesivir is a well-known nucleotide reverse transcriptase inhibitor, available under the trade name Veklury® from Gilead Sciences Inc., that interferes with the SARS-CoV-2 viral replication life cycle and has received emergency use authorization in many regions of the world for treatment of COVID-19. Ebastine is an antihistamine drug that has potent effects in inhibiting the SARS-CoV-2 main protease (Mpro, also called the 3CL protease) blocking viral entry into human cells, together with effects to reduceCOVID-19 inflammatory reactions. Mpro inhibitors are gaining attention in the fight against COVID-19, as announced by Pfizer with their novel compound PF-07304814.

Remdesivir is only available today in injectable form due to poor oral bioavailability, thereby limiting its ease and potential breadth of use commercially. Ebastine and many other MPro inhibitors also face bioavailability challenges when given orally, which Lexaria hopes to change with its technology.

The positive outcomes from study VIRAL-A20-2 may have relevance both for the therapeutic indications of the drugs that were studied as well as for additional antiviral drugs within their classes for indications including and beyond COVID-19.

DehydraTECH-formulated remdesivir and ebastine were administered via oral gavage, each in a single dose of 10 mg/Kg to male Sprague-Dawley rats compared to concentration-matched controls of the same drugs without DehydraTECH formulation. The study was conducted in a total of 40 animals, broken down into four groups of 10 per test article.

The study evaluated peak concentration ("Maximum Concentration" or "Cmax"**) and total drug delivery into the rodent bloodstream ("Area Under the Curve" or "AUClast***"), whereby the rats were evaluated over a period of 48 hours after dosing to derive the measured AUClast over the entire period. Blood quantitation for remdesivir was performed by measuring it in its GS-441524* nucleoside analogue metabolite form because remdesivir is a prodrug that is known to be rapidly converted by host cells into its active form following administration.

The findings were statistically significant only in the case of ebastine AUClast gains upon administration of DehydraTECH formulations versus the concentration matched controls, suggesting that larger sample sizes may have been necessary to overcome the observed variability. Lexaria currently has another tolerability and PK study actively underway in animals (study VIRAL-A20-3) evaluating delivery for three other antiviral drugs of interest

with potential utility against SARS-CoV-2/COVID-19.

Additionally, Lexaria is also awaiting results from a molecular characterization study (study VIRAL-MC21-1) testing all formulations from studies VIRAL-A20-2 and VIRAL-A20-3. The Company is planning to pursue expanded *in vivo* PK and efficacy testing in larger animal populations using the best-performing antiviral drugs from these current investigations to achieve statistical powering of its findings when necessary.

The Company will release results from its ongoing studies as well as plans for future expanded *in vivo* PK and efficacy modelling as they become available. As Lexaria's validating datasets continue to grow, the Company will pursue strategic collaboration opportunities with established pharmaceutical industry partners allowing them to incorporate DehydraTECH technology with antiviral drugs including and/or similar to those that are currently being investigated.

Chris Bunka, CEO, is responsible for the accuracy of this press release. Study VIRAL-A20-2 was conducted by a leading, independent testing laboratory. The Company is not making any express or implied claims that its products have the ability to eliminate, cure or contain the COVID-19 pandemic (or SARS-CoV-2 or novel Coronavirus) or any other virally induced diseases at this time.

About Lexaria Bioscience Corp.

Lexaria Bioscience Corp.'s proprietary drug delivery technology, DehydraTECH™, improves the way active pharmaceutical ingredients (APIs) enter the bloodstream by promoting healthier oral ingestion methods and increasing the effectiveness of fat-soluble active molecules, thereby lowering overall dosing. The Company's technology can be applied to many different ingestible product formats, including foods, beverages, oral suspensions, tablets, and capsules. DehydraTECH has repeatedly demonstrated since 2016 with cannabinoids and nicotine the ability to increase bio-absorption by up to 5-10x, reduce time of onset from 1 - 2 hours to minutes, and mask unwanted tastes; and is planned to be further evaluated for orally administered bioactive molecules, including anti-virals, cannabinoids, vitamins, non-steroidal anti-inflammatory drugs (NSAIDs), and nicotine. Lexaria has licensed DehydraTECH to multiple companies including a world-leading tobacco producer for the development of smokeless, oral-based nicotine products and for use in industries that produce cannabinoid beverages, edibles, and oral products. Lexaria operates a licensed in-house research laboratory and holds a robust intellectual property portfolio with 19 patents granted and approximately 60 patents pending worldwide. For more information, please visit www.lexariabioscience.com.

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This press release includes forward-looking statements. Statements as such term is defined under applicable securities laws. These statements may be identified by words such as 'anticipate,' 'if,' 'believe,' 'plan,' 'estimate,' 'expect,' 'intend,' 'may,' 'could,' 'should,' 'will,' and other similar expressions. Such forward-looking statements in this press release include, but are not limited to, statements by the company relating the Company's ability to carry out research initiatives, receive regulatory approvals or grants or experience positive effects or results from any research or study. Such forward-looking statements are estimates reflecting the Company's best judgment based upon current information and involve a number of risks

and uncertainties, and there can be no assurance that the Company will actually achieve the plans, intentions, or expectations disclosed in these forward-looking statements. As such, you should not place undue reliance on these forward-looking statements. Factors which could cause actual results to differ materially from those estimated by the Company include, but are not limited to, government regulation and regulatory approvals, managing and maintaining growth, the effect of adverse publicity, litigation, competition, scientific discovery, the patent application and approval process, potential adverse effects arising from the testing or use of products utilizing the DehydraTECH technology, the Company's ability to maintain existing collaborations and realize the benefits thereof, delays or cancellations of planned R&D that could occur related to pandemics or for other reasons, and other factors which may be identified from time to time in the Company's public announcements and periodic filings with the US Securities and Exchange Commission on EDGAR. There is no assurance that any of Lexaria's postulated uses, benefits, or advantages for the patented and patent-pending technology will in fact be realized in any manner or in any part. No statement herein has been evaluated by the Food and Drug Administration (FDA). Lexaria-associated products are not intended to diagnose, treat, cure or prevent any disease. Any forward-looking statements contained in this release speak only as of the date hereof, and the Company expressly disclaims any obligation to update any forward-looking statements contained herein, whether as a result of any new information, future events, changed circumstances or otherwise, except as otherwise required by law.

The CSE has not reviewed and does not accept responsibility for the adequacy or accuracy of this release.

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