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# **Lexaria** BIOSCIENCE

**Drug Delivery Platform Innovator  
With Multiple Mainstream Applications**

Corporate Presentation  
April 2024

**Lexaria Bioscience Corp.**  
**NASDAQ:LEXX | NASDAQ:LEXXW**

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No statement within has been evaluated by the Food and Drug Administration, and no product or service is yet commercially approved and intended to diagnose, treat, cure or prevent any disease.



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# Lexaria's Drug Delivery Platform Technology 01

# DehydraTECH - Lexaria's Drug Delivery Platform Technology

- **Enhances** the **pharmacokinetic performance** of Active Pharmaceutical Ingredients (“APIs”) into the **bloodstream** and into **brain tissue**, increasing bioavailability, improving speed of onset and increasing brain absorption;
- **Multiple & applications** in weight loss, diabetes, hypertension and others;
- Can be applied **multiple oral/intraoral product formats** such as tablets, capsules, oral suspensions, mouth-melts and others, and also to **topicals**;
- Focused on commercialization through **partnerships, licensing** and **internal development**;
- Awarded **41 patents granted** and many more pending around the world for use with a broad range of bioactive molecules.

## 2024 Catalysts:

### GLP-1 (Diabetes/Weight Loss):

- April - Long Term Stability & Mode of Action Testing
- May - Human Pilot Study #2: GLP-1-H24-2
- May - Animal Study: WEIGHT-A24-1
- June - Human Pilot Study #3: GLP-1-H24-3
- July - Human Study: GLP-1-H24-4

### Hypertension:

- FDA Investigational New Drug opening study HYPER-H23-1



# DehydraTECH Mechanism of Action

## Dissolvable Orals

LCFAs are believed to block and shunt associated APIs away from bitter taste receptors for APIs that need flavor masking<sup>(1)</sup>

LCFAs influence permeability in the oral cavity<sup>(2)</sup> (i.e., sublingually and/or buccally)

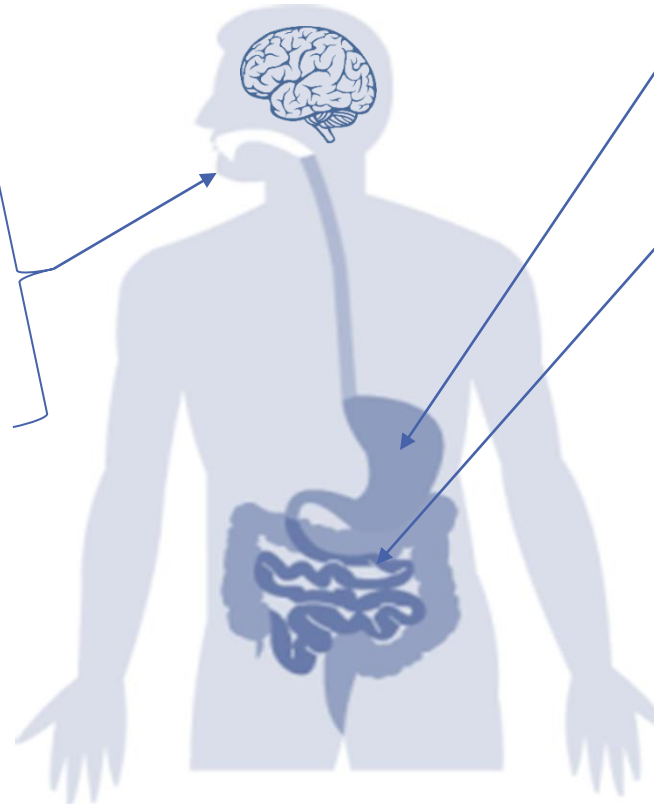
Adjunct ingredients are added to enhance oral cavity permeability performance

## Ingestible Solid Orals / Liquids

LCFAs influence gastric cholecystokinin production and motility<sup>(4)</sup>

Small intestine quickly absorbs LCFA-associated APIs into the bloodstream via the lymphatics bypassing first pass liver effect<sup>(5)</sup>

Adjunct ingredients added to enhance stomach or small intestine uptake depending on desired site of absorption



## Enhanced brain absorption

Once absorbed systemically through dissolvable or solid oral form factors, LCFA-associated APIs are believed to enter brain preferentially through fatty acid transport proteins<sup>(3)</sup>

LCFA = Long Chain Fatty Acid

(1) Coupland & Hayes (2014). Pharm Res. Nov 31(11); 2921-2939 (2) <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6321376/> (3) <https://onlinelibrary.wiley.com/doi/10.1111/j.1471-4159.2011.07245.x> (4) [https://www.gastrojournal.org/article/S0016-5085\(99\)70227-1/fulltext#back-bib2](https://www.gastrojournal.org/article/S0016-5085(99)70227-1/fulltext#back-bib2) (5) Based on dynamic light scattering particle size evaluation studies conducted by Canada's National Research Council as announced July 16, 2020 / <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3202979/pdf/nihms330214.pdf> .

# DehydraTECH - Patented Technology Potential Benefits

Patented drug delivery technology improves oral administration of Active Pharmaceutical Ingredients

Masks unwanted  
taste<sup>(1)</sup>



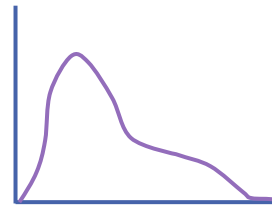
Eliminates the  
need for sugar-  
filled edibles

Improves speed of  
onset



Effects are felt in  
minutes<sup>(2)</sup>

Increases  
bioavailability



Much more  
effective at  
delivering drug into  
bloodstream<sup>(3)</sup>

Increases brain  
absorption



Testing suggests  
up to 17x  
improvement<sup>(4)</sup>

Reduces Drug  
Administration Costs



Higher ratio of  
drug delivery  
expected to lower  
overall drug costs

Better Patient Experience

Improved Quality of Life

(1) Based on subjective clinical testing in 29 human volunteers with CBD, THC and nicotine formulations and hundreds of thousands of commercial product servings of CBD and THC formulations by Lexaria's licensing partners.

(2) Based on subjective clinical testing in 82 human volunteers with CBD, THC and nicotine formulations and hundreds of thousands of commercial product servings of CBD and THC formulations by Lexaria's licensing partners.

(3) Based on objective clinical testing in 13 human volunteers with CBD formulations, and in vivo animal testing in 316 rodents with CBD and nicotine formulations

(4) <https://ir.lexariabioscience.com/news-events/press-releases/detail/128/lexaria-issues-successful-results-from-first-2021-study>

A close-up photograph of a male scientist in a white lab coat and safety glasses, holding a test tube with a blue-gloved hand. The test tube contains a green liquid. He is looking intently at the liquid. In the background, another person is partially visible, also in a lab coat. The image has a blue and purple gradient overlay on the left side.

# DehydraTECH Pipeline and Market Investigations 02



# DehydraTECH Pipeline

	Identification	Modality	Therapeutic / Commercial Use	Potential Indication(s)	Formulation	-->Animal PK -->	Status <i>in vitro</i> / Animal PD	--> Human POC --> Registered Trials
Active 2024 Programs	DehydraTECH-CBD	Small Molecule	Cardiovascular	St. 1/2 Hypertension*	_____	_____	_____	_____ →
	DehydraTECH-GLP-1/GIP	Peptide	Metabolic Disorders	Diabetes / Weight Loss Management	_____	_____	_____	_____ →
	DehydraTECH-CBD	Small Molecule	Metabolic Disorders	Diabetes / Weight Loss Management	_____	_____	_____	_____ →
Past Work / Expansion Potential	DehydraTECH-Nicotine	Small Molecule	Nicotine Replacement	N/A	_____	_____	_____	_____
	DehydraTECH-CBD	Small Molecule	Neurology	Seizure Disorders	_____	_____	_____	
	DehydraTECH-Antiviral	Small Molecule	Antiviral	HIV/Covid-19/etc.	_____	_____	_____	
	DehydraTECH-PDE5	Small Molecule	Cardiovascular	Erectile Dysfunction	_____	_____		
	DehydraTECH-Estradiol	Small Molecule	Hormone Therapy	HRT and Menopause	_____	_____		

**2024 Objectives (red):**  
 - HYPER-H23-1 Phase Ib IND Authorization and Execution\*\*  
 - Comprehensive series of animal and human acute and chronic dosing GLP-1 PK/PD/POC studies

PK = Pharmacokinetic  
 PD = Pharmacodynamic  
 POC = Proof of Concept  
 CBD = Cannabidiol  
 CPG = Consumer Packaged Good product  
 GIP = Glucose dependent insulinotropic polypeptide

GLP-1 = Glucagon-Like Peptide 1 Agonists  
 PDE5 = Phosphodiesterase 5  
 HIV = Human Immunodeficiency Virus  
 HRT = Hormone Replacement Therapy  
 \*For the treatment of stage 1 or stage 2 hypertensive patients not adequately managed with existing treatments  
 \*\* Pending Additional Funding

# Commercial Opportunities

- Lexaria management and directors have extensive experience in building relationships with “**Fortune 500**” companies
- Actively developing **lead product pipeline candidates** in the areas of:
  - **GLP-1 drugs**/diabetes and weight loss
  - **Hypertension** and potentially heart disease
- Lexaria is currently engaged with other companies, exploring partnerships and opportunities with their specific APIs of interest
- **Lexaria out-licenses its technology** in exchange for **up-front fees, milestone payments** and/or **royalty payments**
- **Lexaria is generating revenues** now through the manufacture of corporate customer specified **DehydraTECH** formulations

# Market Value of 2024 DehydraTECH Investigations

Pharmacokinetic studies are evaluating **DehydraTECH's ability to improve quantity** of drug delivered and **speed** with which it is delivered, **in all of these areas:**

DehydraTECH Markets		Size		Future Size	
		US \$bn	Year	US \$bn	Year
Active Programs	Diabetes <sup>(1)</sup>	79.3	2023	<b>134.1</b>	2030
	Cardiovascular Drugs <sup>(2)</sup>	85.8	2023	<b>115.8</b>	2028
	GLP-1 <sup>(3)</sup>	18.0	2023	<b>100.0+</b>	2028
	Epilepsy <sup>(4)</sup>	7.0	2023	<b>9.5</b>	2032
	Human Hormones <sup>(5)</sup>	3.7	2023	<b>7.3</b>	2032
	PDE5 Inhibitors <sup>(6)</sup>	3.4	2023	<b>6.1</b>	2032

(1) <https://www.fortunebusinessinsights.com/industry-reports/diabetes-drugs-market>

(2) <https://www.researchandmarkets.com/reports/5410400/global-cardiovascular-drugs-market-2023-2028>

(3) <https://www.reuters.com/business/healthcare-pharmaceuticals/novo-nordisk-rivals-see-room-compete-100-mln-weight-loss-drug-market-2023-05-04/>

(4) <https://www.precedenceresearch.com/epilepsy-drug-market>

(5) <https://www.globenewswire.com/en/news-release/2023/05/23/2674523/0/en/8-1-CAGR-of-Human-Growth-Hormone-Market>

(6) <https://www.globenewswire.com/en/news-release/2023/04/06/2642598/0/en/Erectile-Dysfunction-Drugs-Market-Value>

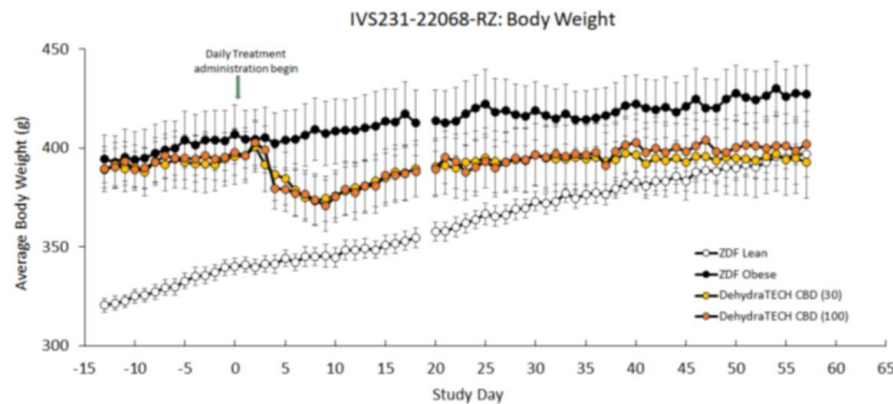


# DehydraTECH for Diabetes and Weight Loss 03

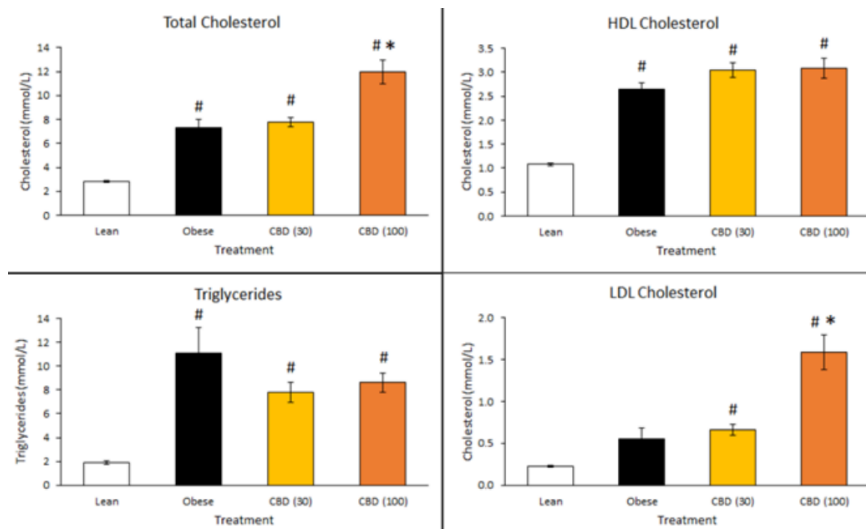
# 2022 Zucker Rat Study for Diabetes – DehydraTECH-CBD

Lexaria's DehydraTECH-CBD Zucker rat diabetes study [DIAB-A22-1](#) evidenced:

**7% weight loss, reduced blood glucose levels ( $19.9 \pm 7\%$  ( $p < 0.05$ )), reduced triglyceride levels (25%), improved cholesterol levels and increased general activity ( $p < 0.05$ ).**

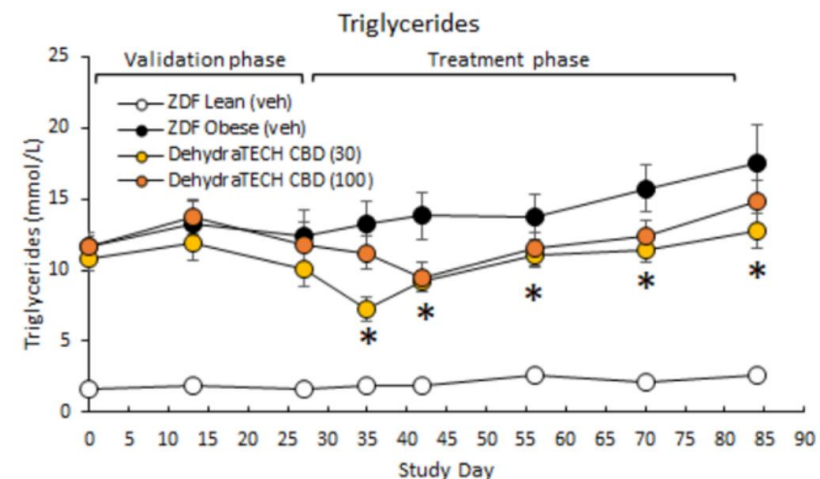


Roughly 7% weight loss apparent vs. study start by treatment day 10 with CBD(30) and CBD(100)

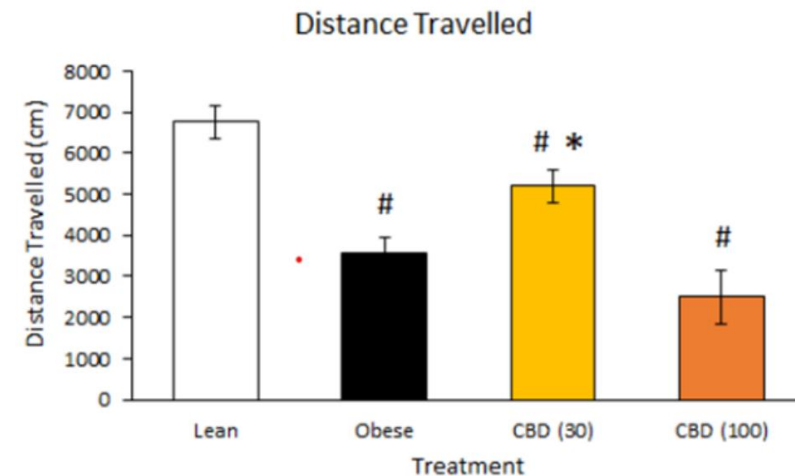


\* $p < 0.05$  vs. obese group

# $p < 0.05$  vs. lean group



\*CBD(30) produced significantly lower triglycerides than untreated obese rats,  $p < 0.007$



\*CBD(30) produced significant improvement over obese control rats,  $p < 0.05$

#Treated and untreated obese rats significantly different than leans  $p < 0.05$



# 2023 Clinical Study - DehydraTECH-Semaglutide vs. Rybelsus®

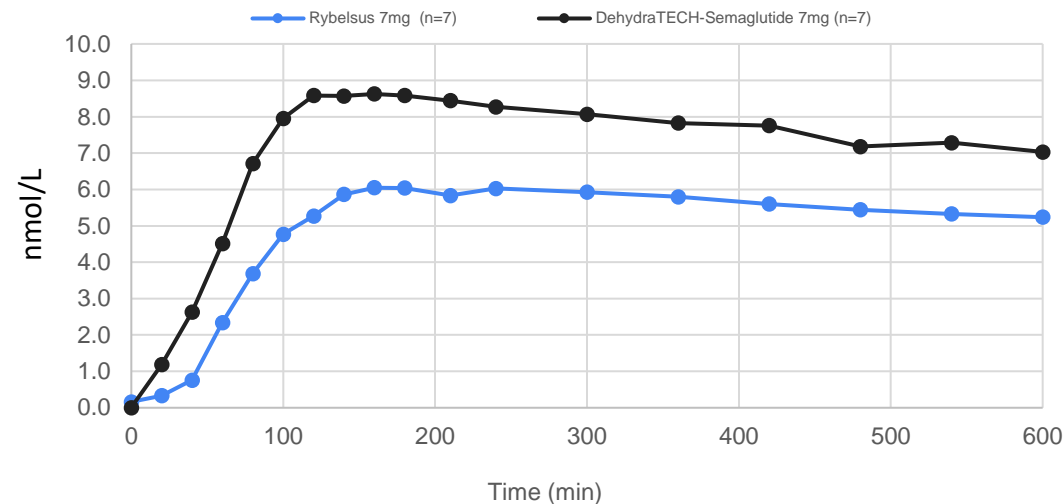
## Study Design

- Randomized, cross-over, single-dose, Investigator-initiated pilot study in 7 healthy volunteers (completed in 2023):
  - Rybelsus 7mg tablets vs. **DehydraTECH**-Semaglutide 7 mg compound formulated capsules (using crushed Rybelsus tablets);
- Blood sampled at 18 intervals from T=0 to T=600 min and again at T=24hr post-dose follow up (figures do not show T-24hr data);

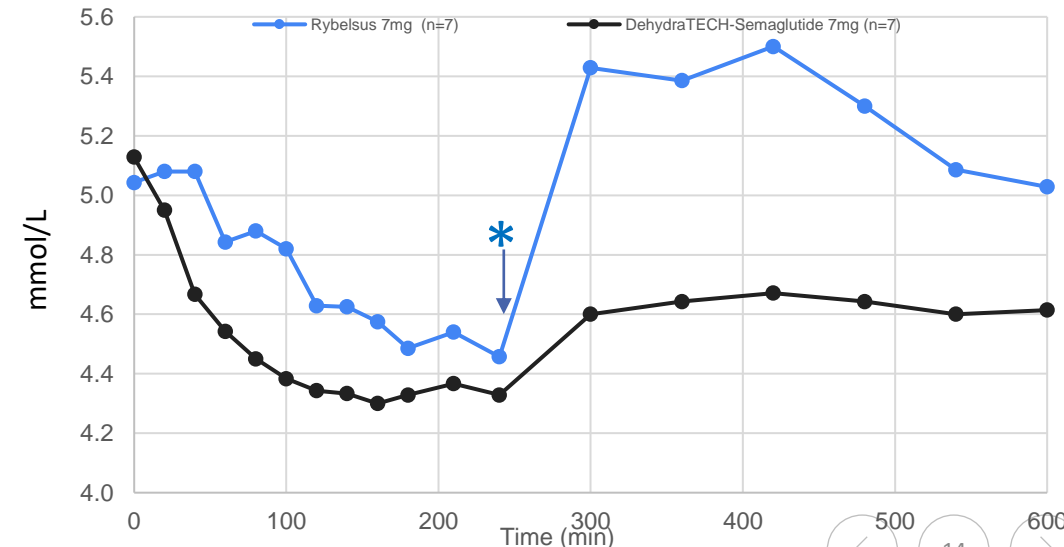
## Key Results

- Sustained **higher** blood semaglutide levels / AUC demonstrated throughout the study duration with **DehydraTECH** ( $p < 0.05$ );
- Blood glucose levels **lower** throughout the study with **DehydraTECH** ( $p < 0.05$ ); most notably post prandially\*;
- Enhanced central delivery attributes of **DehydraTECH** may have contributed to the pronounced GLP-1 effect profile witnessed;
- **Improvements** in GI tolerability observed:
  - **Zero** instances of moderate nausea/diarrhea with **DehydraTECH**-Semaglutide;
  - **Moderate** nausea ( $n=2$ ) and moderate diarrhea ( $n=1$ ) only reported with Rybelsus treatment.

Blood semaglutide levels



Blood glucose levels

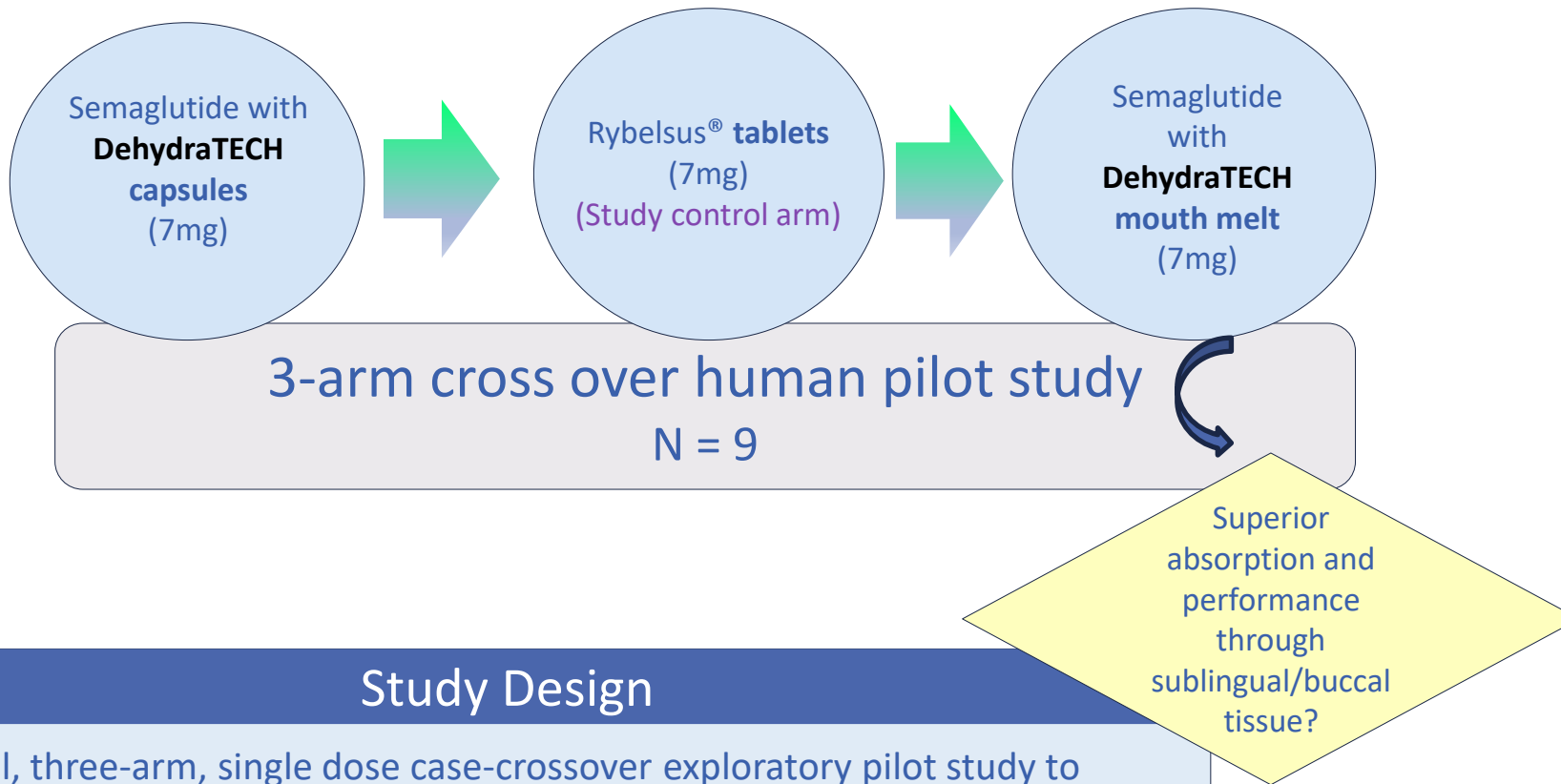


# Lexaria's 2024 Diabetes & Weight Loss R&D Program Focus

- Upcoming animal/human studies of **DehydraTECH** with various GLP-1/GIP APIs:
  - Animal #1 (WEIGHT-A24-1) – Zucker rats (n=72), 12 arms
  - Pilot #2 (GLP-1-H24-2) – Human (n=9), 3 arms;
  - Pilot #3 (GLP-1-H24-3) – Human (n=8), 2 arms;
  - Phase 1 (GLP-1-H24-4) – Human Phase 1b (n=80 obese, pre-/T2D), 4 arms.
- Parameters to be tested include:
  - Pharmacokinetics
  - Body weight
  - Blood glucose (including post-dose food challenge)
  - Glucagon
  - Insulin and A1C levels
- Drugs to be examined: Semaglutide – Liraglutide – Tirzepatide - Cannabidiol
- Semaglutide will be evaluated both with, and without, SNAC presence
- Long term stability and mode of action characterization testing will also be performed

NOTE: Tirzepatide is also a glucose-dependent insulinotropic polypeptide (GIP) receptor agonist  
T2D = Type 2 Diabetes  
SNAC = Sodium Salcaprozate

# GLP-1-H24-2 Human Pilot Study Design (Start: May 2024)



## Study Design

Open label, three-arm, single dose case-crossover exploratory pilot study to assess the tolerability, PK, and glucose homeostasis.

Test side effects, blood saturation levels, blood sugar and blood insulin

### Primary endpoint:

- Safety and tolerability of oral ingestible and sublingual/buccal semaglutide with **DehydraTECH** vs Rybelsus

### Secondary endpoint:

- PK and PD of oral ingestible and sublingual/buccal semaglutide with **DehydraTECH** vs Rybelsus

# WEIGHT-A24-1 Animal Study Design (Start: May 2024)

Grp	Treatment	N
A	<b>DehydraTECH</b> -CBD (HYPER-H21-4-OTC composition)	6
B	<b>DehydraTECH</b> -CBD (DIAB-A22-1 / IVS231-22068-OTC composition)	6
C	<b>DehydraTECH</b> -CBD (HYPER-H23-1-P composition)	6
D	<b>DehydraTECH</b> -CBD (Secondary DIAB-A22-1 / IVS231-22068-P composition)	6
E	<b>DehydraTECH</b> -semaglutide (re-formulated Rybelsus OTC version)	6
F	<b>DehydraTECH</b> -semaglutide (re-formulated Rybelsus-P version)	6
G	<b>DehydraTECH</b> -semaglutide (pure API-P version)	6
H	<b>DehydraTECH</b> -liraglutide (pure API-P version)	6
I	Combo of one <b>DehydraTECH</b> -semaglutide and one <b>DehydraTECH</b> -CBD	6
J	Combo of <b>DehydraTECH</b> -liraglutide and one <b>DehydraTECH</b> -CBD	6
K	Vehicle (water)	6
L	Commercially available Rybelsus tablet as a crushed powder	6
	Total N =	72

12-week study to investigate the effects of test formulations (**DehydraTECH**) containing CBD, semaglutide, or liraglutide on diabetes and obesity in the male Zucker diabetic fatty (ZDF) rats.



Blood saturation levels

Blood sugar levels

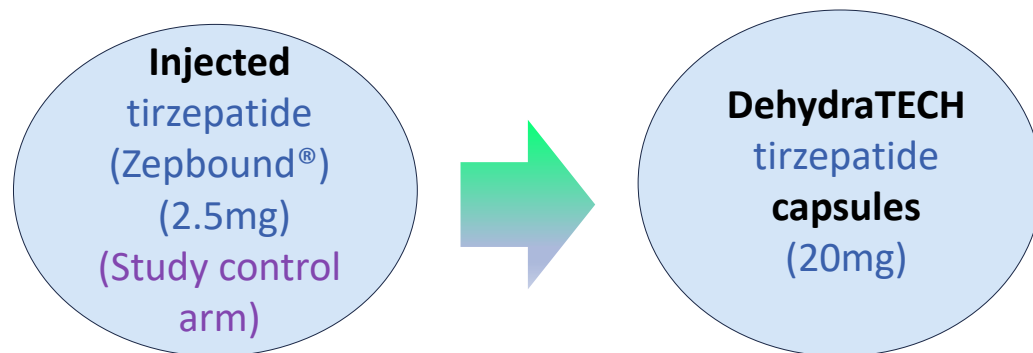
Blood insulin

Blood glucagon

Brain tissue

Weight loss

# GLP-1-H24-3 Human Pilot Study Design (Start: June 2024)



2-arm cross over human exploratory pilot study  
N = 8

## Study Design

Randomized single dose (7-day), two-arm exploratory pilot study

Test side effects, blood saturation levels, blood sugar and blood insulin

### Primary endpoint:

- Safety and tolerability of oral **DehydraTECH**-tirzepatide relative to subcutaneously administered tirzepatide in healthy volunteers

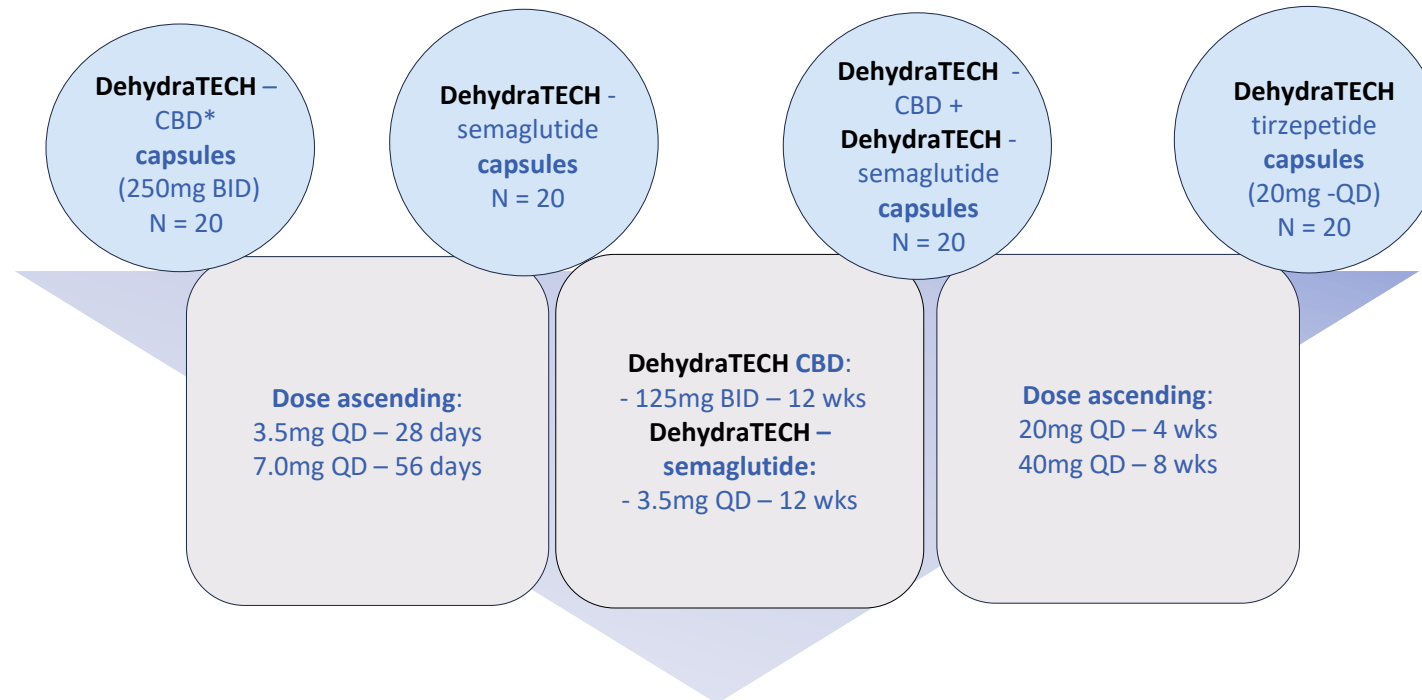
### Secondary endpoint:

- Pharmacokinetics and efficacy of oral **DehydraTECH**-tirzepatide relative to subcutaneously administered tirzepatide in healthy volunteers

The new **DehydraTECH** tirzepatide **capsule** formulation (from Zepbound®) designed with FDA-compliant co-ingredients. Zepbound® is a dual action GLP-1 + GIP drug



# GLP-1-H24-4 Ph1 Human Study Design (Start: July 2024)



## Primary Endpoint

- Magnitude of decrease in HbA1c and/or 5% bodyweight reduction

## Secondary Endpoint

- Fasting glucose, cholesterol levels
- Inflammation, estimated glomerular filtration rate
- Liver enzymes
- Assessment of adverse events using a visual analog scale

## Study Design

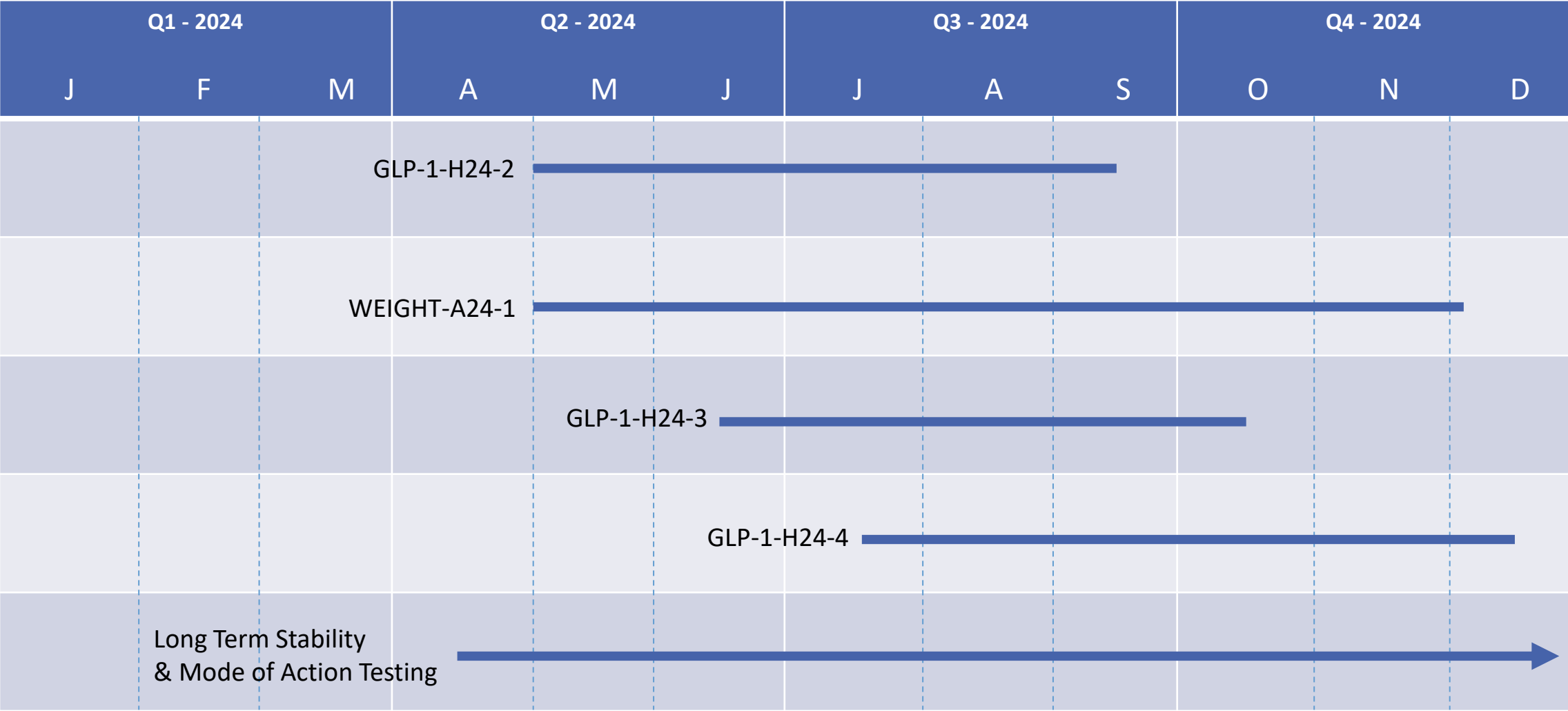
12-week study to determine the efficacy and safety of **DehydraTECH**-CBD alone or in combination with different formulations of a glucagon-like peptide 1 (GLP-1) agonist in obese volunteers and/or patients with pre or Type 2 diabetes

The study will use pure semaglutide and pure tirzepatide rather than Rybelsus and Zepbound derived respectively

## \***DehydraTECH** - CBD

250mg BID dose in this study is higher compared to the previous study completed which used 30mg/kg and 100 mg/kg and showed 7% weight loss reductions in both dosing

# 2024 R&D Program Timeline

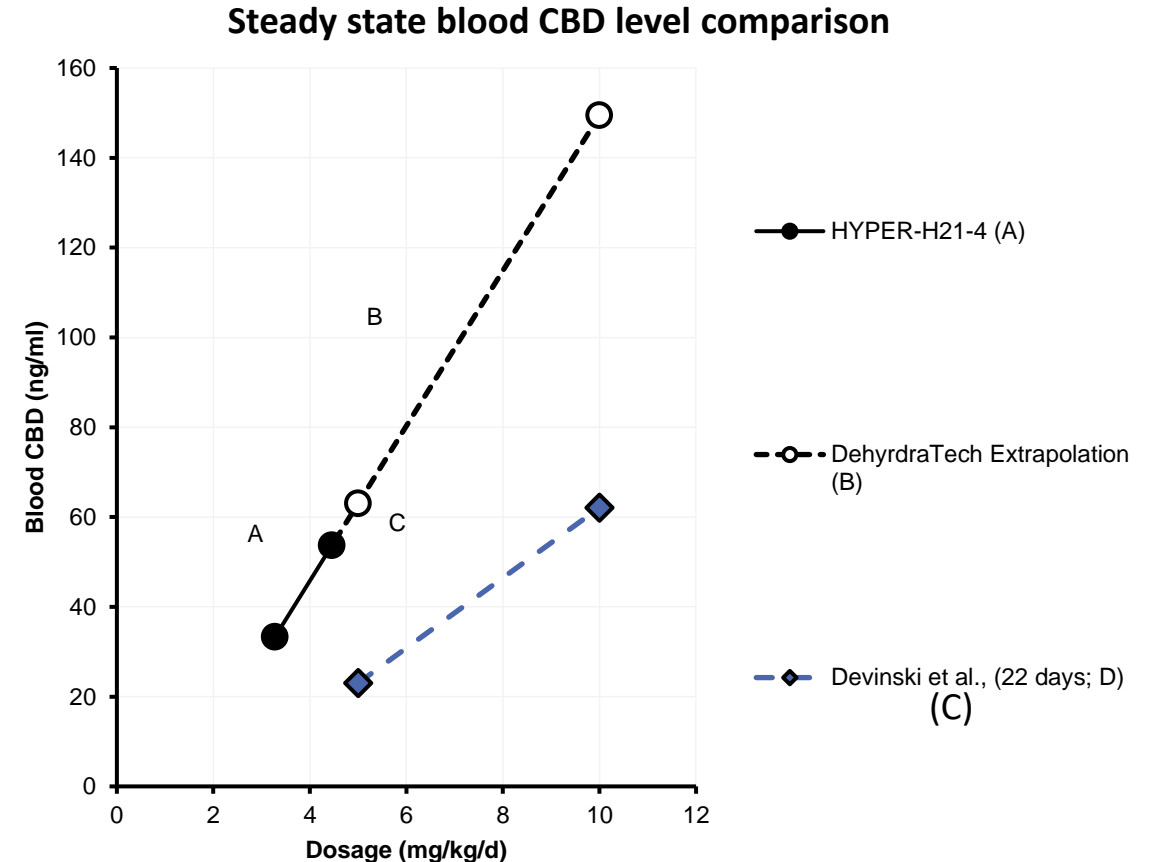


A photograph of two scientists, a man and a woman, in a laboratory setting. The man, wearing glasses and a lab coat, is holding a small vial with a blue cap and a pipette. The woman, wearing safety goggles and a lab coat, is looking at the vial. The background is a blurred laboratory environment with various equipment and shelves.

# DehydraTECH for Hypertension 04

# DehydraTECH-CBD PK compared to Epidiolex®

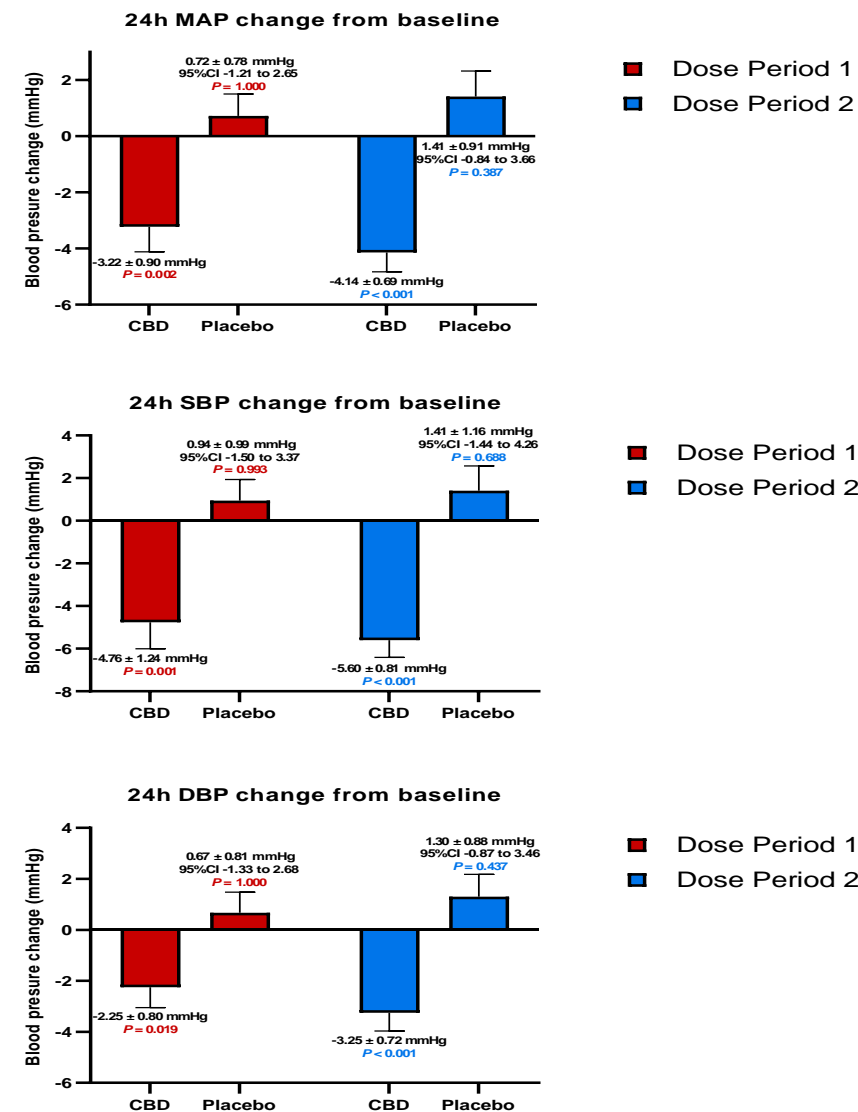
- HYPER-H21-4 evidenced superior steady-state pharmacokinetics relative to Epidiolex® in published literature comparison;
- Study assessed 3.38 mg/Kg and 4.46 mg/Kg **DehydraTECH-CBD** daily dose levels over a 5 week treatment period (2.5 weeks/dose period);
- Almost **3X higher** CBD levels shown in bloodstream at 4.46 mg/Kg dose when compared to published 5 mg/Kg Epidiolex® dose and extrapolated to 10 mg/Kg dose.<sup>(1)</sup>



(1)Devinsky Study <https://pubmed.ncbi.nlm.nih.gov/28538134/>

# DehydraTECH for Stage 1 and 2 Hypertension

- Randomized, placebo-controlled investigator-initiated study HYPER-H21-4 in 66 patients with stage 1 or 2 hypertension
- 5-week treatment duration (i.e., a 2.5-week dose period @ 3.38 mg/Kg TID followed by 2.5-week dose period @ 4.46 mg/Kg TID);
- Significant reductions shown in mean arterial (MAP), systolic (SBP) and diastolic blood pressure ( $p < 0.05$ );
- Other published research has shown reductions of ~4.6 mmHg for SBP and ~2.2 mmHg for DBP as clinically significant to reduce risk of MI, stroke and CHF. **DehydraTECH**-CBD exceeded these thresholds;
- Potential novel mechanism of action in reducing blood pressure and a reduction in pro-inflammatory biomarkers;
- Enhanced central delivery attributes of **DehydraTECH** may improve BP regulation;
- Study also suggested potential additive BP reduction benefits with standard of care medications; and
- Zero serious adverse events were recorded.





# DehydraTECH FDA Phase 1b IND Program

## IND Opening Study – Stage 1/2 Hypertension

- Successful pre-IND meeting with the FDA in 2022 with 505(b)(2) NDA regulatory pathway confirmed;
- Received FDA clearance for IND opening study HYPER-H23-1:
  - Phase 1b randomized, double-blind, placebo-controlled study of the safety, pharmacokinetics, and pharmacodynamics of **DehydraTECH**-CBD for the treatment of stage 1 or 2 hypertension;
- Only a handful of other published studies have investigated resting blood pressure impacts of CBD; none have reported sustained reductions except **DehydraTECH**-CBD;
- FDA has issued clear guidelines defining the need for new antihypertensives that offer novel modes of action;
- Treatment of Stage 1 or 2 hypertensive patients not adequately managed with existing treatments.

## Possible Future Studies

- Lexaria envisions potential additional new human clinical studies of **DehydraTECH**-CBD under IND based on its animal study successes:
  - Study EPIL-A21-1 demonstrated suppressed seizure activity at lower doses and more rapidly than Epidiolex®
  - Study DIAB-A22-1 evidenced suppressed body weight, improved triglyceride/cholesterol levels and reduced blood glucose levels



# Management, Directors and Advisors 05

# Executives, Directors, and Advisors With Drug Delivery Technology and Capital Markets Expertise



**Chris Bunka** Chairman & CEO

- Serial entrepreneur involved in several private and public companies since the late 1980's
- Extensive experience in the capital markets, corporate governance, M&A and finance
- Named inventor on multiple patent innovations



**Julian Gangolli** Strategic Advisor

- Former President of GW Pharmaceuticals USA and Allergan N.A
- Extensive US and International executive level experience in Large Pharma, Specialty Pharmaceutical, and Start-Up Biotechnology environments
- Board of Directors member of three NASDAQ traded pharmaceutical companies; Revance Therapeutics, Krystal Biotech and Outlook Therapeutics



**John Docherty, M.Sc.** President

- Specialist in development of drug delivery technologies
- Former President and COO of Helix BioPharma Corp. (TSX: HBP)
- Named inventor on multiple issued and pending patents
- Pharmacologist and toxicologist



**Dr. Philip Ainslie** Scientific & Medical Advisor

- Co-Director for the Centre for Heart, Lung and Vascular Health, Canada
- Research Chair in Cerebrovascular Physiology and Professor, School of Health and Exercise Sciences, Faculty of Health and Social Development at the University of British Columbia



# Financial Information

# 06

# Financial Information<sup>(1)</sup>

## NASDAQ:LEXX | NASDAQ:LEXXW

Shares Outstanding	12.9 million
Fully Diluted	19.5 million
Share Price	US \$3.20
Insider Ownership	5.0% <sup>(2)</sup>
Average Volume	952,633 <sup>(3)</sup>
Market Cap	US \$41.8 million
Last Financing <small>(February 2024)</small>	US \$3.6 million
Cash and Equivalents <small>(Q2 – est)</small>	US ~\$4.7 million
Debt	US \$0

[www.LexariaBioscience.com](http://www.LexariaBioscience.com)

[ir@lexariabioscience.com](mailto:ir@lexariabioscience.com)

NASDAQ:LEXX | NASDAQ:LEXXW

(1) As of 03/28/2024, source Nasdaq

(2) Does not include derivative holdings, as of August 31, 2023

(3) 1-month average volume, as of March 28, 2024







# Investment Highlights 07

# Lexaria Overview

## Multiple Mainstream Applications of DehydraTECH in Large Markets

- **DehydraTECH** is a **versatile drug delivery platform**
- **DehydraTECH** offers **faster and more effective drug absorption** into bloodstream and brain tissues
- **DehydraTECH** pipeline **addressing serious unmet patient needs** with substantial market potential
- **Large addressable market opportunities** in GLP-1 drugs, hypertension and other APIs

## 2024 Catalysts

### **GLP-1 (Diabetes/Weight Loss):**

- Human Pilot Study #2: GLP-1-H24-2
- Animal Study: WEIGHT-A24-1
- Human Pilot Study #3: GLP-1-H24-3
- Phase I Human Study: GLP-1-H24-4
- Long Term Stability & Mode of Action Testing

### **Hypertension:**

- FDA Investigational New Drug opening study HYPER-H23-1

## Commercialization Through Licensing and Partnerships

- **Extensive experience with drug delivery technology; capital markets; “Fortune 500” relationships**
- Currently engaged with other companies, exploring **partnerships and opportunities** with their specific APIs of interest
- **License agreements in place**
- **41 patents granted** and many more patent applications pending around the world



Powered by

# Lexaria

## BIOSCIENCE

Drug Delivery Platform Innovator  
With Multiple Mainstream Applications

### CONTACT:

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[ir@lexariabioscience.com](mailto:ir@lexariabioscience.com)



# Appendix I: DehydraTECH for Diabetes - Animal Study DIAB-A22-1

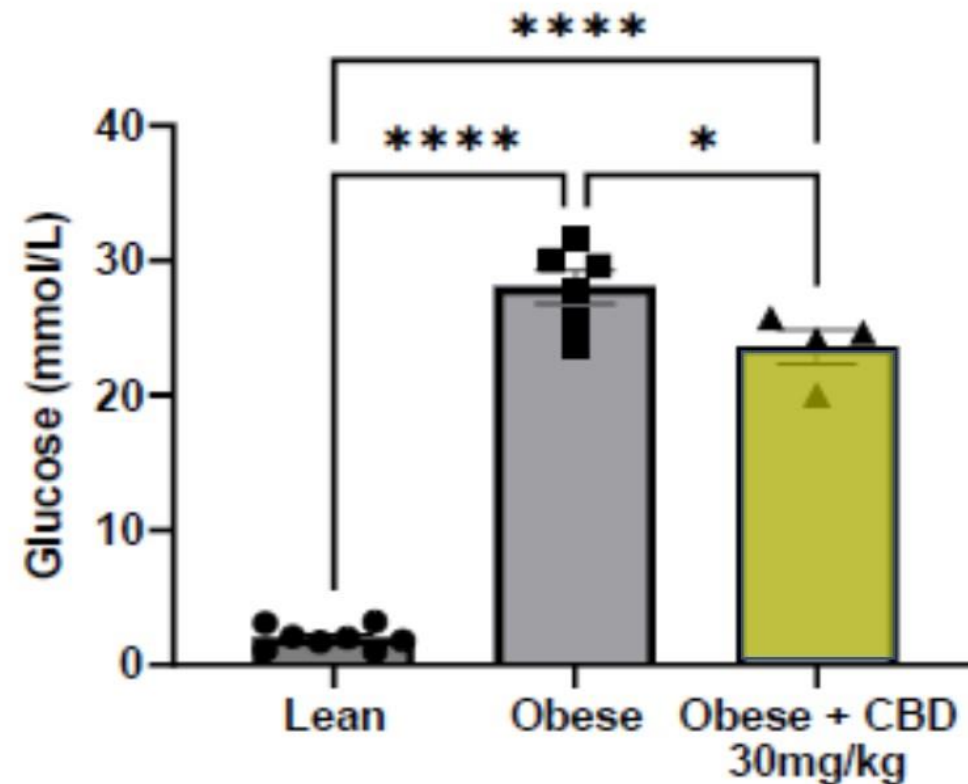
# DehydraTECH for Diabetes - Animal Study DIAB-A22-1

On March 2, 2023 and June 16, 2023 Lexaria announced that in pre-clinical diabetes study DIAB-A22-1 in obese diabetic-conditioned animals, **DehydraTECH**-CBD achieved each of the following:

- **Lowered** blood glucose levels by **19.9%** ( $p < 0.05$ )
- **Lowered** overall body weight by **7%** sustained over 8 weeks
- Witnessed a statistically significant **increase** in locomotor activity ( $p < 0.05$ )
- **Lowered** triglyceride levels by more than **25%** ( $p < 0.007$ )
- **Lowered** blood urea nitrogen levels by **27.9%** ( $p < 0.001$ )

# Animal Study DIAB-A22-1 Results

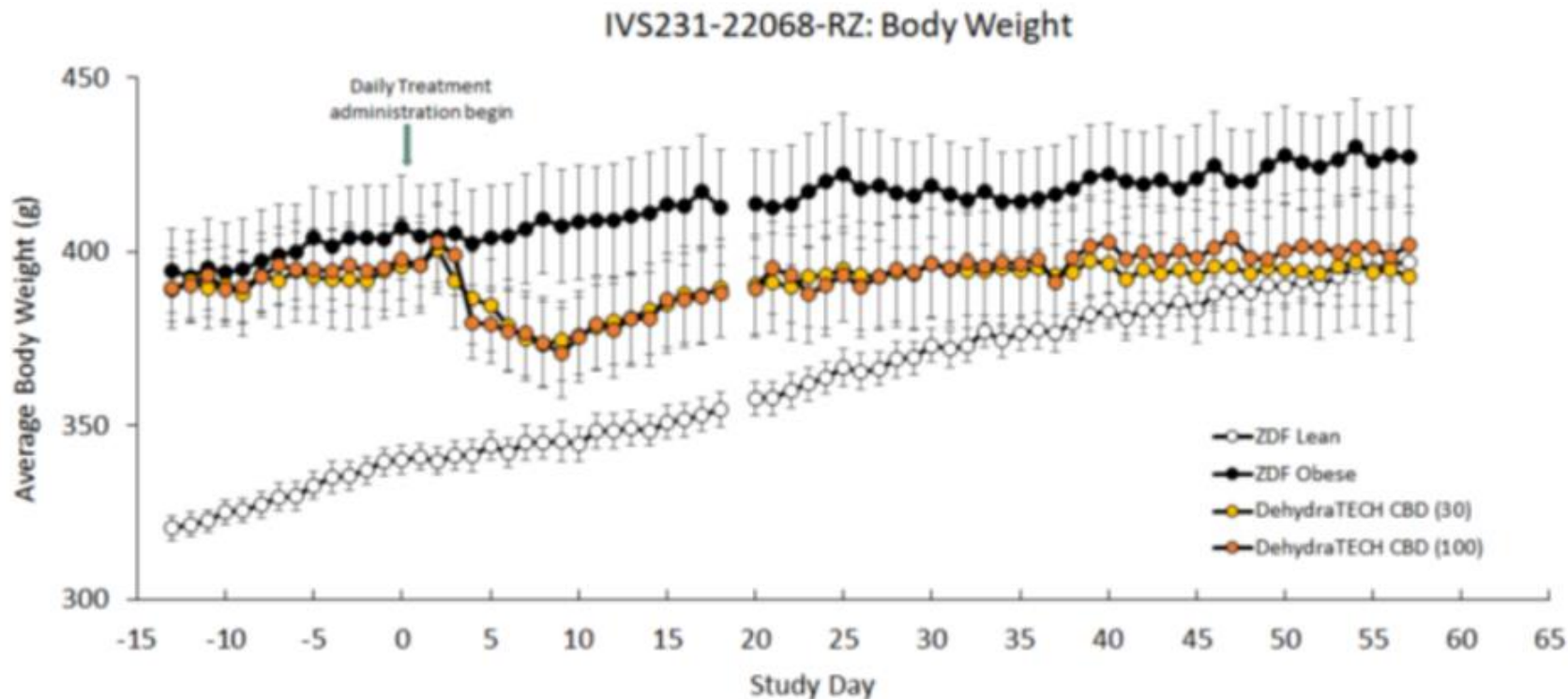
**Lowered blood glucose levels:** Using the Antech hexokinase blood chemistry test panel methodology, Lexaria discovered that blood glucose levels were statistically significantly lowered by  $19.9 \pm 7\%$  in the obese diabetic-conditioned animals treated with the **DehydraTECH**-CBD 30 mg/Kg dose (yellow bar below) (\* $p < 0.05$ ) compared to the obese vehicle control animals.





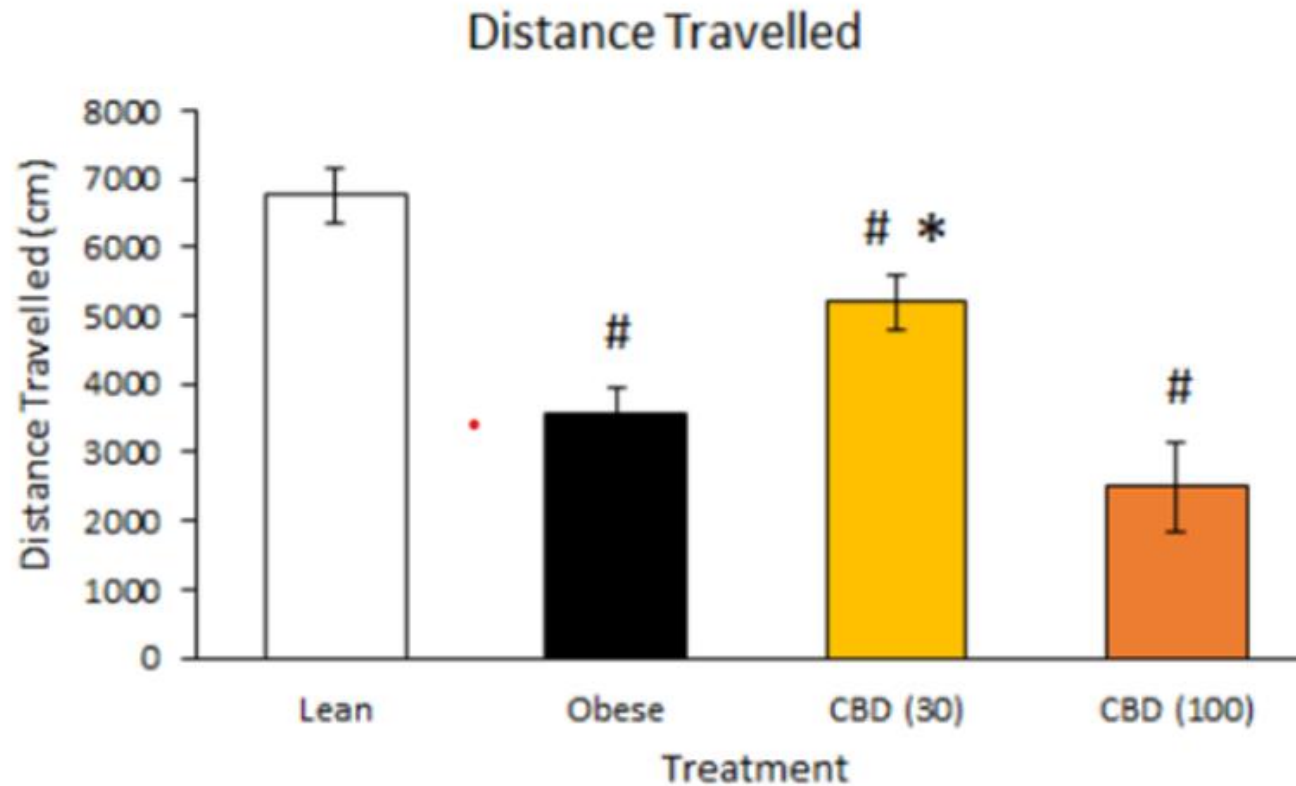
# Animal Study DIAB-A22-1 Results

**Lowered overall body weight:** Beginning just four days after the start of dosing with **DehydraTECH**-CBD, the obese rats began to lose weight. The weight loss was maximized nine days after dosing and maintained throughout the 8-week study duration. This apparent trend demonstrated roughly a 7% loss of body weight throughout the course of treatment at both **DehydraTECH**-CBD doses studied (30 mg/Kg and 100 mg/Kg). Only the **DehydraTECH**-CBD-dosed animals weighed less at the end of the study than at the beginning, whereas the weight of the untreated obese animals trended upwards throughout the study.



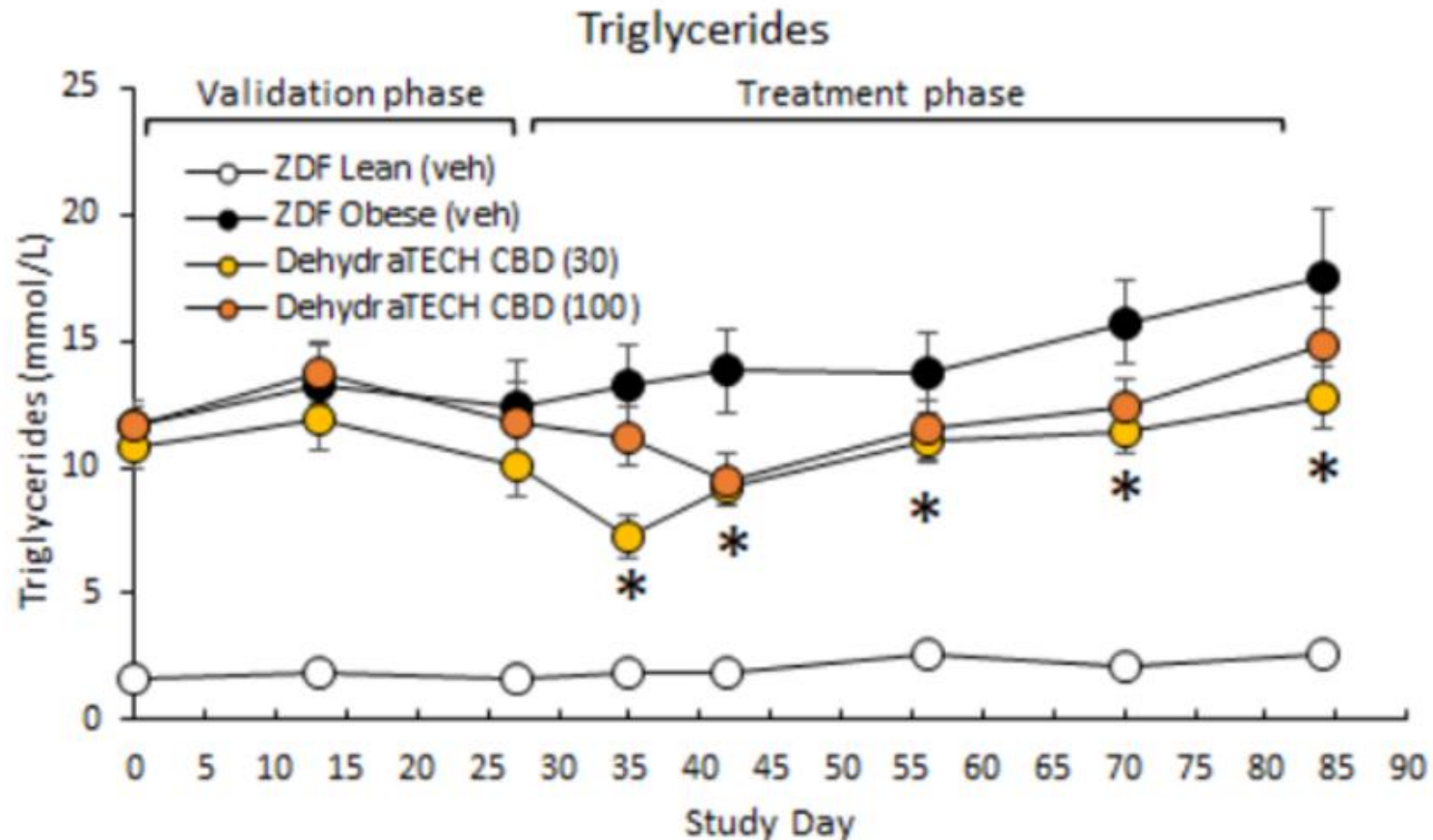
# Animal Study DIAB-A22-1 Results

**Increase in locomotor activity:** Activity levels, which were measured in this study via locomotor activity, the distance the animals travelled in open field observations. Interestingly, the lower dose of **DehydraTECH**-CBD resulted in a statistically significant improvement in locomotor activity compared to the untreated obese control rats (\* $p < 0.05$ ), whereas there was no significant difference accordingly evidenced at the higher dose.



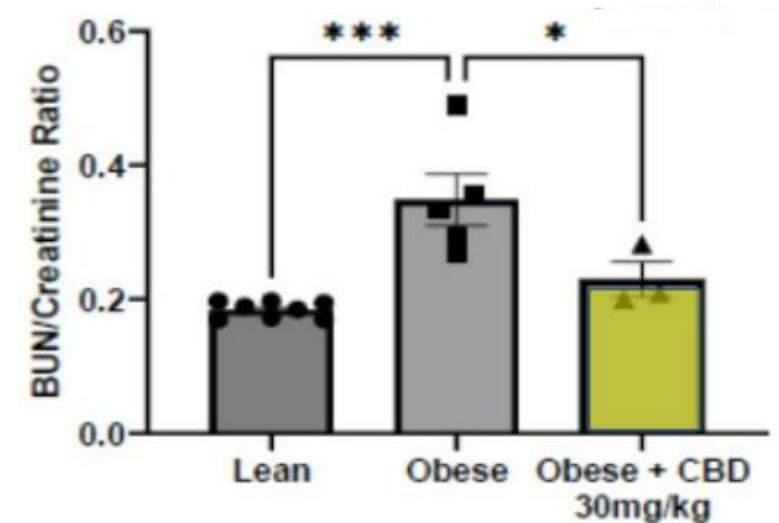
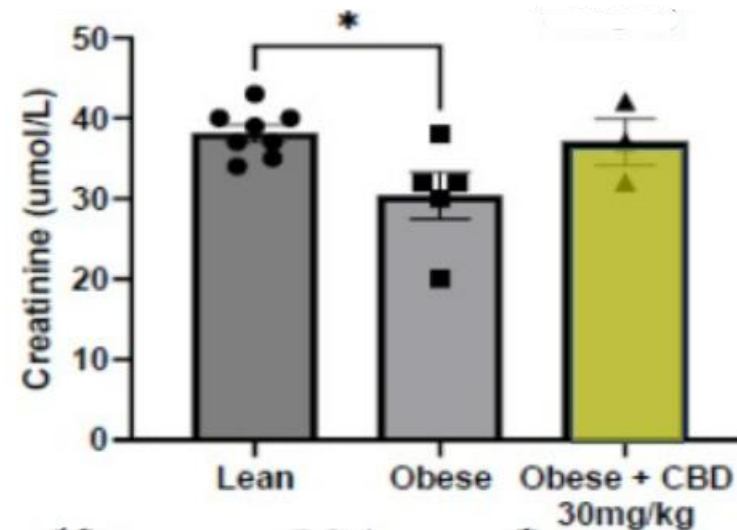
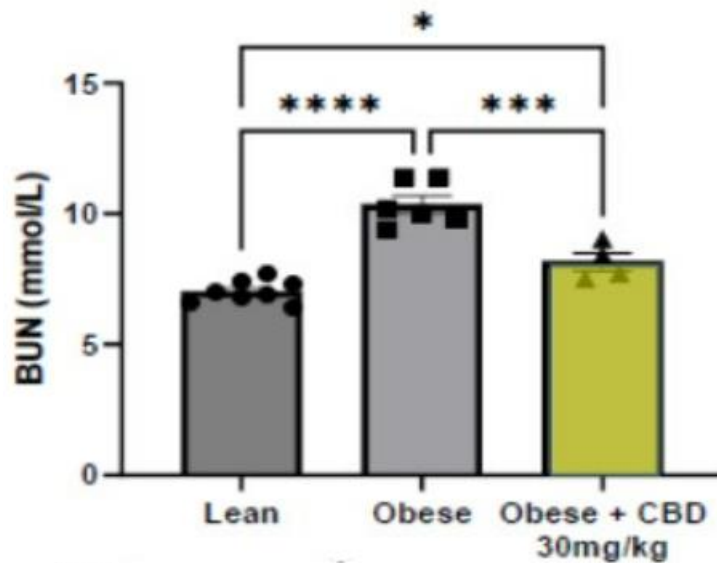
# Animal Study DIAB-A22-1 Results

**Lowered triglyceride levels:** The animals dosed with **DehydraTECH**-CBD showed statistically significant reductions in triglyceride levels from day 35 onwards compared to the obese animals not dosed with **DehydraTECH**-CBD.



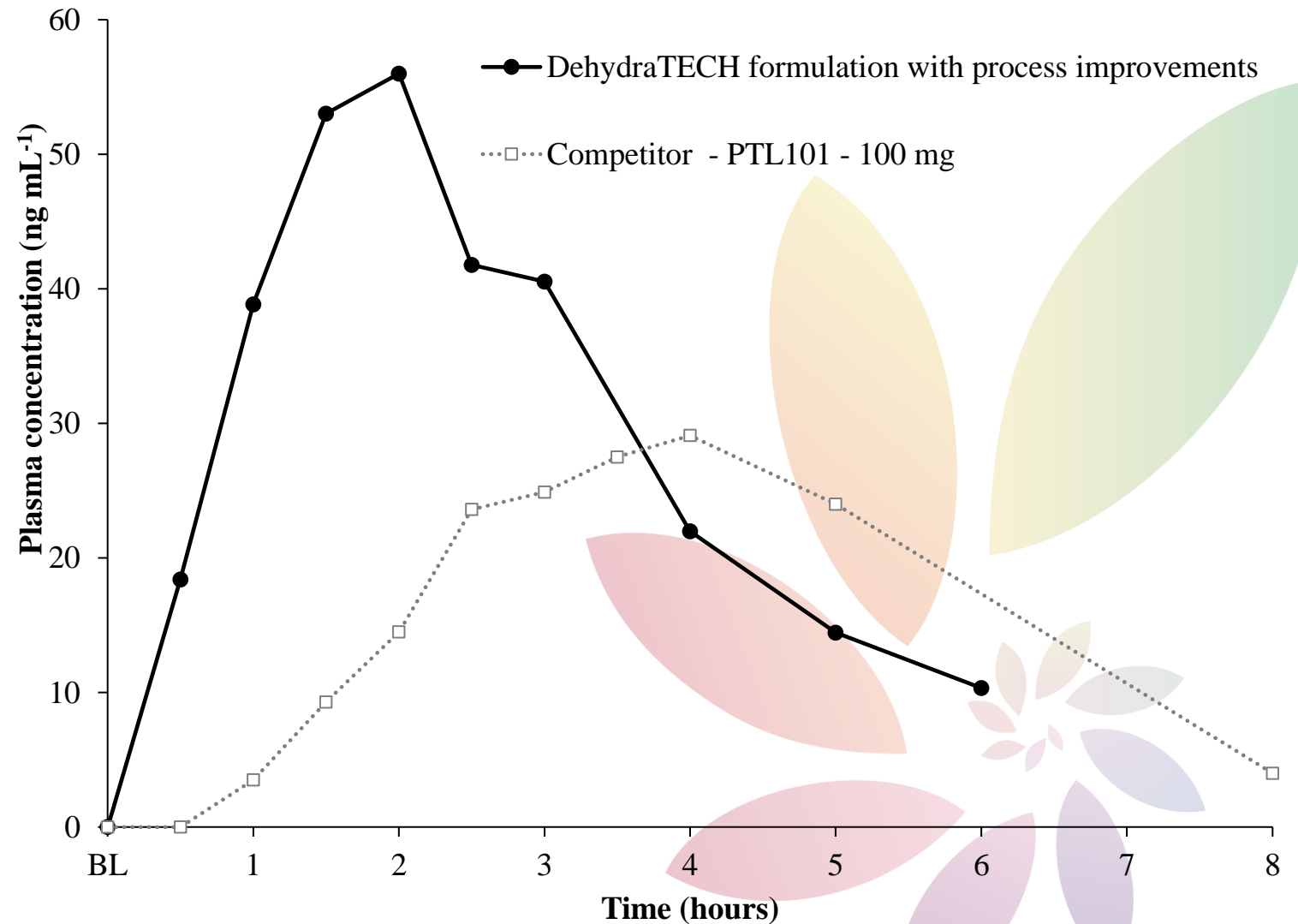
# Animal Study DIAB-A22-1 Results

**Lowered blood urea nitrogen levels:** Kidney function was also evaluated compared to the vehicle control animals by examination of the levels of blood urea nitrogen ("BUN"), creatinine, and assessment of the BUN/creatinine ratio. BUN levels were reduced by 27.9% +/- 5% (\*\*p<0.001) in the obese animals receiving **DehydraTECH**-CBD. Creatinine levels were also improved with a 16.8% +/-7% increase in the obese animals receiving **DehydraTECH**-CBD, although this improvement was not statistically significant. The calculated BUN/creatinine ratio in the obese animals being treated with **DehydraTECH**-CBD returned to a healthy range nearly equal to that of the lean animals, with a 55.1% +/-16% reduction (\*p<0.05)



# DehydraTECH Oral CBD Human Clinical Study

- [2018](#) European human clinical study (n=12)
- Double-blind, 90 mg CBD dose of **DehydraTECH** (“TurboCBD”)
- **Higher CBD delivery** throughout entire study
- **Higher cerebral perfusion** shown vs. baseline ( $p < 0.001$  )
- **Lower blood pressure (“BP”)** shown vs. baseline ( $p < 0.05$ )

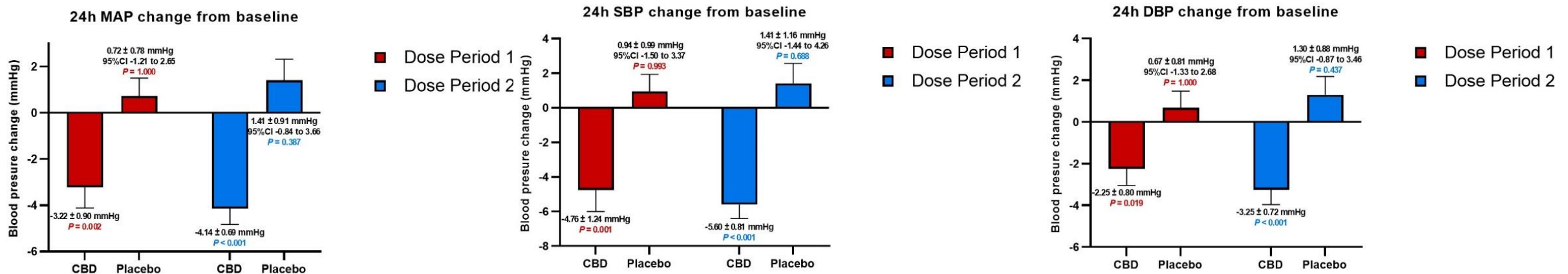




# Lexaria's Advanced Hypertension Program Results

## Lexaria's Advanced Hypertension Program Delivers Results with No Serious Adverse Effects:

- 2018 - 12 person PK HCS evidenced 317% more CBD delivered to blood at 30-minutes
- 2021 - HYPER-H21-1: 24 person HCS evidenced rapid and sustained drop in blood pressure
- 2021 - HYPER-H21-2: 16 person HCS evidenced up to a 23% average reduction in overnight blood pressure and reduced arterial stiffness
- 2021 - HYPER-H21-3: 16 person HCS reduced attenuated pulmonary artery systolic pressure ("PASP") by ~5 mmHg or 41% overall in male participants
- 2022 - HYPER-H21-4: 66 person HCS evidenced:
  - Exceptional safety and tolerability, statistically significant lowering of 24-hour ambulatory blood pressure ("BP"), BP lowered for the entire 5-week study duration and BP lowered both for patients currently taking other antihypertensive drugs as well as patients not taking any other antihypertensive drugs





# DehydraTECH-CBD Hypertension Program

## Lexaria Issues Successful Results from First 2021 Study, HYPER-A21-1 - (May 6, 2021)

- Up to **2,178%** more CBD delivered into bloodstream
- Up to **1,737%** more CBD delivered into brain tissue

## Lexaria's Newest DehydraTECH 2.0 Formulation Tested in Study HYPER-A21-2 Demonstrates Its Strongest CBD Absorption Results Ever - (May 20, 2021)

- New formulation delivers up to **2,708%** more CBD into bloodstream

## Lexaria's DehydraTECH-CBD Lowers Blood Pressure - (July 29, 2021)

- Human Clinical Study HYPER-H21-1 evidences a rapid and sustained drop in blood pressure with DehydraTECH-CBD and excellent tolerability

## Lexaria's Human Clinical Study Delivers Effective and Safe Blood Pressure Reduction Results over 24-hour Ambulatory Period - (September 7, 2021)

- Human Clinical Study HYPER-H21-2 evidences up to a remarkable **23%** decrease in blood pressure with patented DehydraTECH-CBD relative to placebo



# Other Examples of AUC Improvements from Non-Registration Enabling Studies

- **Antiviral Therapies** – DehydraTECH-enabled remdesivir and ebastine delivered 82% and 204% more drug into the bloodstream and a 167% improvement in drug delivery was demonstrated utilizing DehydraTECH-enabled colchicine in rats.
- **PDE5 Inhibitors** – DehydraTECH-processed sildenafil in rats demonstrated a 37% drug delivery improvement.
- **Human Hormones** – DehydraTECH-estradiol achieved total drug delivery levels that were 1,500% greater than the control for estradiol in rats and over 12,500% greater for estrone.
- **Reduced Risk Oral Nicotine** – DehydraTECH-processed nicotine benzoate delivered 169% more nicotine into the bloodstream in rats. Also shown to reach Tmax in investigator-initiated human clinical study ~15-20% faster than commercially approved products on!® and Zyn® (p<0.05) with trend toward higher levels of certain pleasurable effects achieved sooner in study participants.

# DehydraTECH Demonstrates Higher Brain Perfusion with Nicotine

- Lexaria's **DehydraTECH** technology delivered 195% more nicotine orally into exsanguinated brain tissue in [rodent study](#);
- Lexaria's formulation was 4x faster at reaching its peak level in brain tissue than the concentration-matched control formulation; and

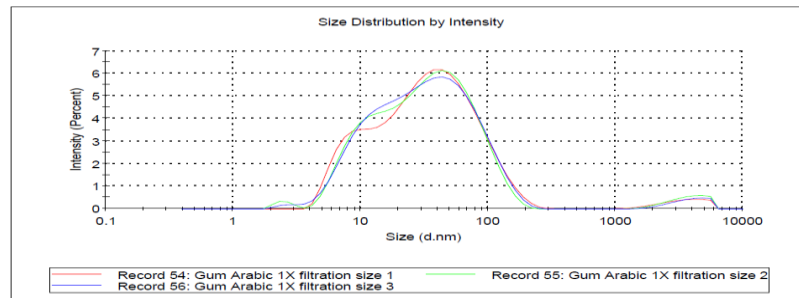
	Lexaria Formulation	Control Formulation
Cmax (ng/g)	1,260 ± 200	427 ± 66.5
Tmax (hr)	1.0	4.0
T1/2 (hr)	21.6	ND
MRTlast (hr)	9.24	7.03
AUClast (hr.ng/g)	12,999 ± 1252	5,881 ± 538

- Similar findings have also been documented with other **DehydraTECH**-processed APIs such as [THC](#) and [CBD](#).

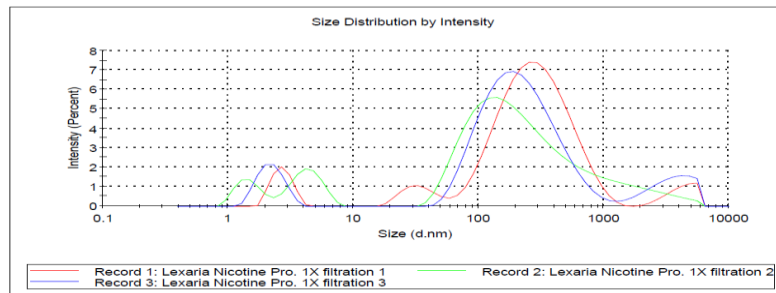
# DehydraTECH Molecular Characterization Studies

- DLS and Zeta Potential screening shows formation of unique, negatively charged nanoparticles with **DehydraTECH-nicotine** formulation compared to constituent subparts

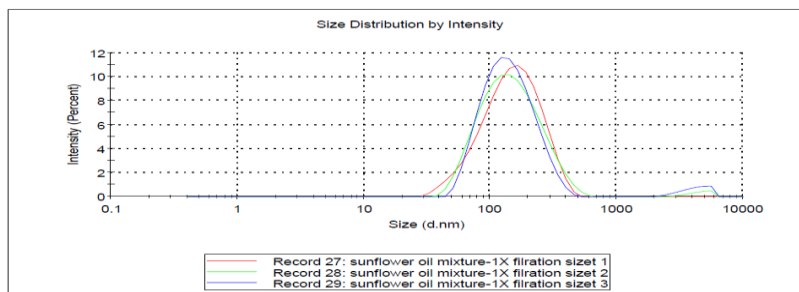
Gum Arabic



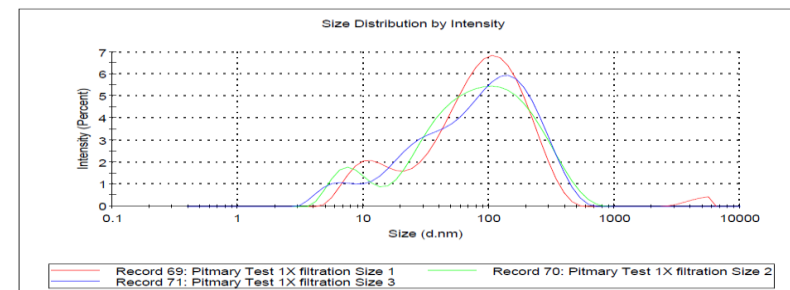
Nicotine Polacrilex



LCFA Oil + Nicotine Polacrilex

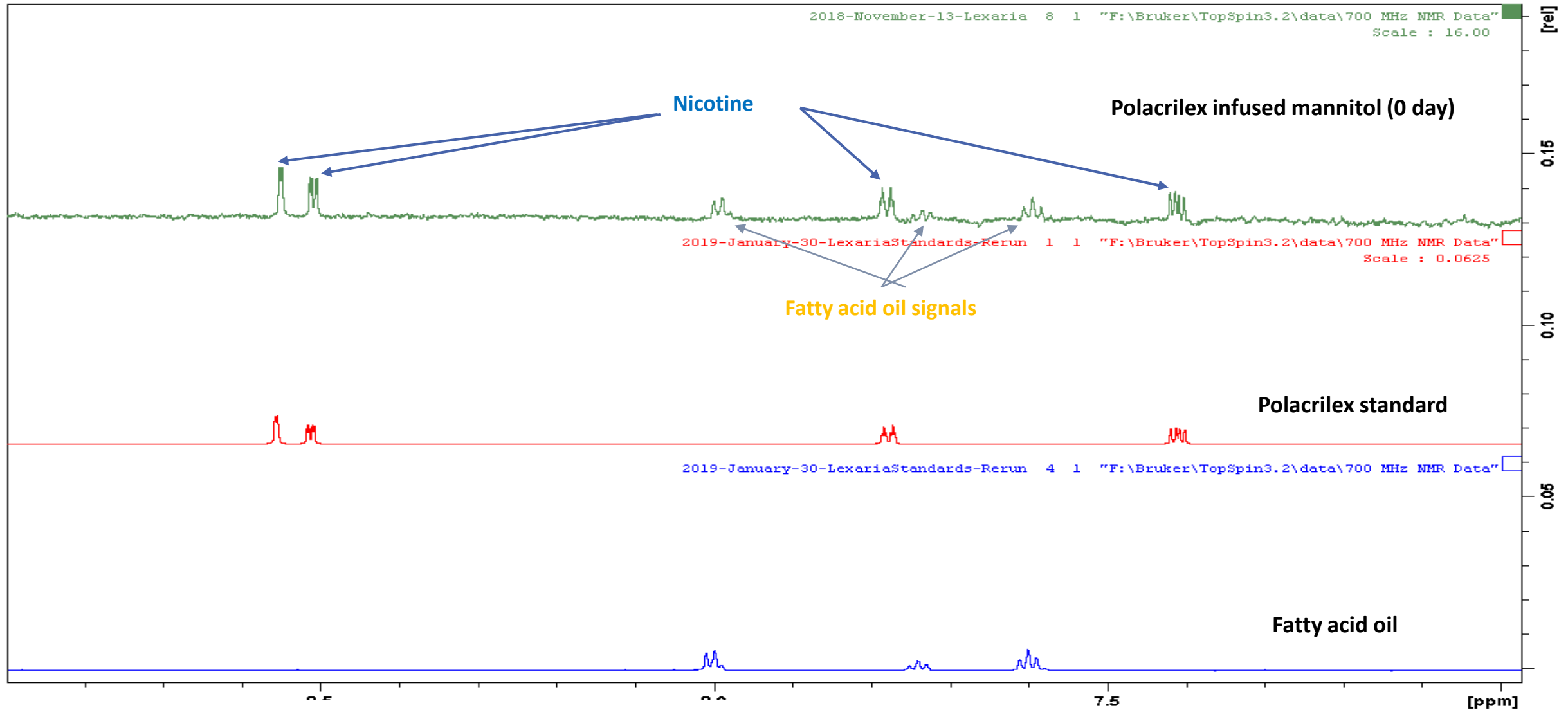


DehydraTECH-Nicotine (“Test Article”)



Product	Size (nm)	Zeta Potential (mV)
Gum Arabic	42	-19
Nicotine Polacrilex	328	-15
LCFA Oil/Nicotine mixture	163	-30
Test Article	117	-30

# NMR Testing – No Covalently Bond NME with DehydraTECH-Nicotine



NMR = nuclear magnetic resonance testing.  
NME = New molecular entity



# Appendix II: Scientific Publications



# List of Scientific Publications

For more information visit: [Lexaria Research](#)

[International Journal of Molecular Sciences](#) — June 2023

- Differences in Plasma Cannabidiol Concentrations in Women and Men: A Randomized, Placebo-Controlled, Crossover Study.

[Advances in Therapy](#) — June 2023

- The Influence of Oral Cannabidiol on 24-h Ambulatory Blood Pressure and Arterial Stiffness in Untreated Hypertension: A Double-Blind, Placebo-Controlled, Cross-Over Pilot Study.

[Cannabis and Cannabinoid Research](#) — April 2023

- Chronic Effects of Oral Cannabidiol Delivery on 24-h Ambulatory Blood Pressure in Patients with Hypertension (HYPER-H21-4): A Randomized, Placebo-Controlled, and Crossover Study.

[Journal of Personalized Medicine](#) — June 2022

- Chronic Effects of Effective Oral Cannabidiol Delivery on 24-h Ambulatory Blood Pressure and Vascular Outcomes in Treated and Untreated Hypertension (HYPER-H21-4): Study Protocol for a Randomized, Placebo-Controlled, and Crossover Study.

[Journal of Functional Foods](#) — November 2023

- Antihypertensive effects of CBD are mediated by altered inflammatory response: A sub-study of the HYPER-H21-4 trial.

[Biomedicine & Pharmacotherapy](#) — June 2023

- Effects of CBD supplementation on ambulatory blood pressure and serum urotensin-II concentrations in Caucasian patients with essential hypertension: A sub-analysis of the HYPER-H21-4 trial.

[Pharmaceuticals](#) — April 2023

- Trial of a Novel Oral Cannabinoid Formulation in Patients with Hypertension: A Double-Blind, Placebo-Controlled Pharmacogenetic Study.

[Biomedicine & Pharmacotherapy](#) — April 2023

- CBD supplementation reduces arterial blood pressure via modulation of the sympatho-chromaffin system: A substudy from the HYPER-H21-4 trial.

[Advances in Therapy](#) — September 2019

- Examination of a New Delivery Approach for Oral Cannabidiol in Healthy Subjects: A Randomized, Double-Blinded, Placebo-Controlled Pharmacokinetics Study.