**APRIL 2023** 

# %\vecho

ENTITLEMENT OFFER TO FUND PIVOTAL PHASE III CLINICAL TRIAL



<u>www.avecho.com.au</u>

**ASX:AVE** 

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# **FAST FACTS**

- Avecho is developing pharmaceutical cannabinoid products using TPM® delivery technology
- First **75 mg CBD capsule completed** with Catalent, USA (May 2021)
- First human clinical trial (Phase I PK) completed (Dec 2021) characterised absorption
- Pivotal Phase III clinical trial ready to begin (ethics approval Dec 2022)
- Targeting over-the-counter registration in Australia, followed by rest of world
- Licenses signed for CBD capsule and TPM in overseas markets (Dec 21-Feb 22).
- **Partnerships** for non-cannabinoid pharmaceutical products (Perrigo, Athenex; Dec 22, Jan 23)

# **CLEAR STRATEGIC FOCUS**

- 1. Complete Phase III clinical trial testing proprietary pharmaceutical CBD capsule containing TPM
- 2. Commercialise this, and other TPM cannabinoid products, in multiple markets



# **CANNABINOIDS AS MEDICINE**

- Medicinal cannabis extracts are being legalized around the world
- Some markets are allowing consumer and recreational uses
- Unregistered medicinal cannabis products are being prescribed for a range of therapeutic indications
- Normal R&D into formulation development has been minimal, and the initial product offerings were simple oil-based formulations
- A range of more acceptable dosage forms are required to fulfil the needs of patients, physicians and consumers



# THE PROBLEM WITH CANNABINOIDS

Cannabinoids have very poor oral bioavailability; only ~6% of ingested cannabinoids are absorbed

This presents challenges for developing formulations that can deliver cannabinoids to the body efficiently

Increasing cannabinoid bioavailability has become a focus for many laboratories around the world, as increasing bioavailability can allow;

- ✓ Greater therapeutic effect
- ✓ New indications, previously untreatable because of high doses required
- ✓ Reduced dosing for cost savings to patients
- ✓ Provide commercial differentiation

Few medicinal cannabis companies have the expertise to address these issues



# **AVECHO'S TPM® PROVIDES A SOLUTION**

TPM is Avecho's proprietary phosphorylated vitamin E product

TPM encapsulates drug molecules to improve their:

- solubility
- stability
- oral bioavailability
- dermal/transdermal delivery

TPM has an excellent safety profile making it ideal for drug reformulation

Cannabinoids have the perfect chemistry for compatibility with TPM

TPM reformulated drugs have:

- improved pharmaceutical properties and performance
- Commercial opportunities for differentiation and patent protection

#### Propofol TPM®



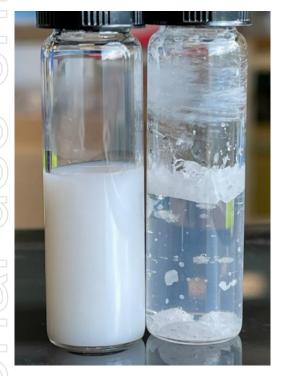




Without TPM

### **AVECHO'S TPM SOLUBILIZES CANNABINOIDS**

Cannabidiol\* Solubility



With TPM Without TPM

**Increased solubility with TPM leads to....** 

Oral Incre

**Increased oral absorption** 

Topical

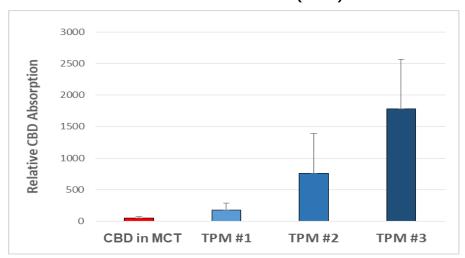
**Increased topical absorption** 

8

\*Cannabidiol (CBD) is the main non-psychoactive cannabinoid in cannabis.

# TPM INCREASES ORAL ABSORPTION OF CBD

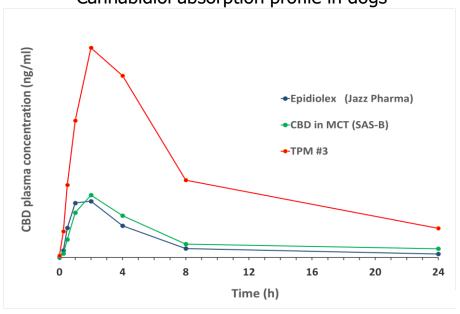
Total cannabidiol absorbed (AUC) in rats



Rodent studies conducted at Bioneer:FARMA in Copenhagen

✓ Increases in AUC produced by TPM formulations ranged from ~4-40 times in rats





Dog studies conducted at Labcorp in the UK

- ✓ Increases in AUC produced by TPM formulations ranged from ~3.7-5.6 times in dogs
- ✓ Better absorption than Epidiolex, the only FDA approved pharmaceutical CDB product

# **CANNABIS MARKET OVERVIEW**





#### **Global Legal Cannabis Market**

- Legal use permitted (adult or medical) in 30 countries
- Valued at \$17.8 billion USD in 2021
- North America accounted for the largest revenue share,
   65.0% in 2021
- Projected compound annual growth rate (CAGR) of 25.3%
- Expected to reach \$73.6 billion USD by 2027

#### **Australian Cannabis Market**

- Medicinal use only, currently through unregistered medicine's scheme
- \$66 million USD in 2022
- Expected to reach \$540.6 million USD by 2030
- Projected CAGR of 30.1%

Despite the global value of the cannabis market, the products themselves have become commodities with little commercial differentiation

# PHARMACEUTICAL CANNABIDIOL IS VALUABLE

There is currently only one pharmaceutical CBD product approved by the FDA (Epidiolex)

- Epidiolex<sup>®</sup> was developed by GW Pharma
- It is approved by the FDA for rare childhood epilepsy conditions
- GW Pharma was acquired for **\$7.2Bn USD** by Jazz Pharma (2021) to obtain Epidiolex
- It is anticipated that registered pharmaceutical CBD products for broader indications would generate larger markets

Avecho is targeting large indications like insomnia for its pharmaceutical CBD product, a huge commercial opportunity



# **UNIQUE AUSTRALIAN OPPORTUNITY**

- The Australian Therapeutic Goods Association (TGA) has allowed pharmaceutical CBD products to be registered as over-the-counter (OTC) medicines.
- OTC medicines are available direct from a pharmacist without a prescription, a significant commercial advantage over the existing medicinal cannabis products that require a prescription

OTC registration will be difficult, but the difficulties play to Avecho's strengths

5)((	OTC Requirement	Challenge	Avecho Advantage		
	Maximum dose of 150mg CBD per day	150mg of CBD is considered a low dose and may not prove effective	A product with increased absorption acts like a higher dose		
0	Clinical trials proving CBD is effective	CBD has not been proven to work for insomnia in Phase III clinical trials, making trial design hard	Avecho has significant experience in the design and conduct of clinical trials using a range of drugs		
	Pharmaceutical manufacturing with 2 year shelf life	CBD can degrade over time in formulations, making it difficult to demonstrate a 2 year shelf life	Avecho's CBD product was developed for pharma stability, with first batches already passing 1.5 years stability		

This CBD opportunity is currently unique in the world

Avecho is ideally positioned to be one of the first to successfully register a CBD product for the OTC market

# PHARMACEUTICAL CBD TPM CAPSULE COMPLETE

- Formulations developed by Avecho over the last 3 years; increase CBD absorption in animal models (rodent and dog)
- Capsule design finalised at Catalent, USA (May 21)
- 75 mg of ultra-pure, synthetic CBD (Purisys) per capsule
- Product shows good pharmaceutical stability (ongoing; passed 18 months).
- Phase I pharmacokinetic (PK) study to characterise the CBD absorption completed (Dec 21)
- Phase III clinical trial to be conducted in Australia in a sleep related indication in 2023 (ethics approval Dec 22).
- Product seeking TGA approval as an OTC medicine, followed by rest of world
- International PCT patent applications filed to protect formulation



# **CBD FOR THE TREATMENT OF INSOMNIA**

Insomnia can be broadly defined as difficulty initiating or maintaining sleep.

Growing body of prescribing information suggesting that CBD may alleviate the symptoms of insomnia.

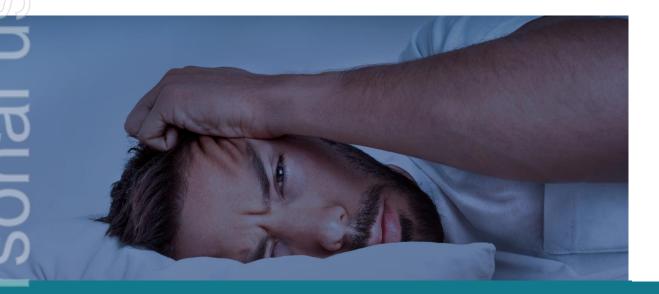
The TGA has confirmed CBD could be registered as an over-thecounter medicine for the treatment of insomnia. **40%** of Australians getting less sleep than they need

**59.4%** Experience symptoms 3-4 times per week

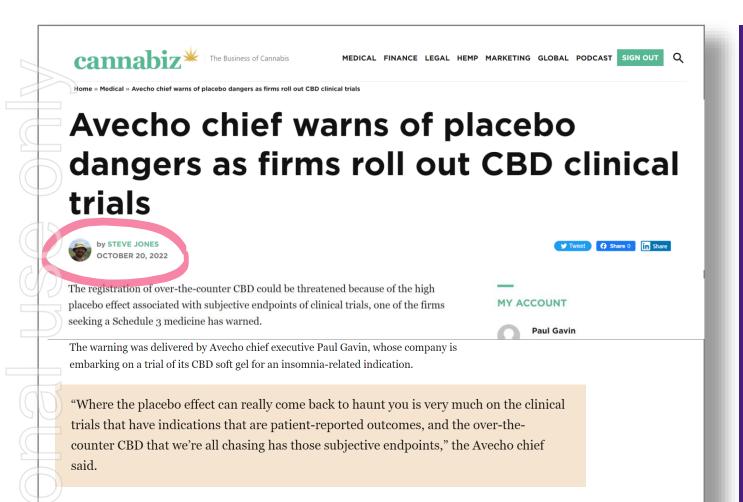
Only 20% report their sleep is uninterrupted

**~\$250M p.a.** spent on existing medications with unwanted side effects

Costs Australian economy \$19.1 B per annum



# CLINICAL TRIAL DESIGN EXPERTISE IS CRITICAL



- A placebo effect is when a patient reports improvement in their condition after taking a pretend (placebo) medicine
- Trials with subjective endpoints (like insomnia) have high placebo effects
- The placebo effect makes it difficult to monitor a drug's effect, minimizing the chance of success in clinical trials
- Avecho went on record (left) in 2022, describing the risks to the industry for upcoming CBD trials
- In 2023, the first two Phase III trials investigating CBD for insomnia announced their failure, attributing this result to the placebo effect

## PHASE III STUDY DESIGN

#### **Based upon study design from FDA approved insomnia medications**

Avecho's Phase III insomnia trial has been designed to maximise the chance of success. Compared to recent studies, Avecho's trial uses;

- The maximum dose (150mg)
- Larger patient numbers (540 patients)
- Higher insomnia scores required for inclusion
- Longer dosing period (8 weeks)
- An interim analysis (after 300 patients) to calculate required patient numbers
- Methods to minimise the placebo effect

#### Assessments include;

- Daily sleep diary to record nightly sleep.
- Sleep questionnaire every two weeks.
- Wearable device to record daily objective sleep data

#### 8 week treatment period

Treatment A – Placebo before bed

Treatment B – 75 mg CBD before bed

Treatment C – 150 mg CBD before bed

# **REMAINING DEVELOPMENT PROGRAM (2023-24)**

#### **Chemistry, Manufacturing and Control (CMC)**

- Further CMOs engaged for access to other markets (complete)
- Manufacturing scale up to registration batch (1/10<sup>th</sup> commercial scale) size (**ongoing**)
- Registration batches to be submitted for formal stability (Q2 2023)
- Complete CMC dossier for use in registration dossier (2024)

#### **Phase III sleep indication**

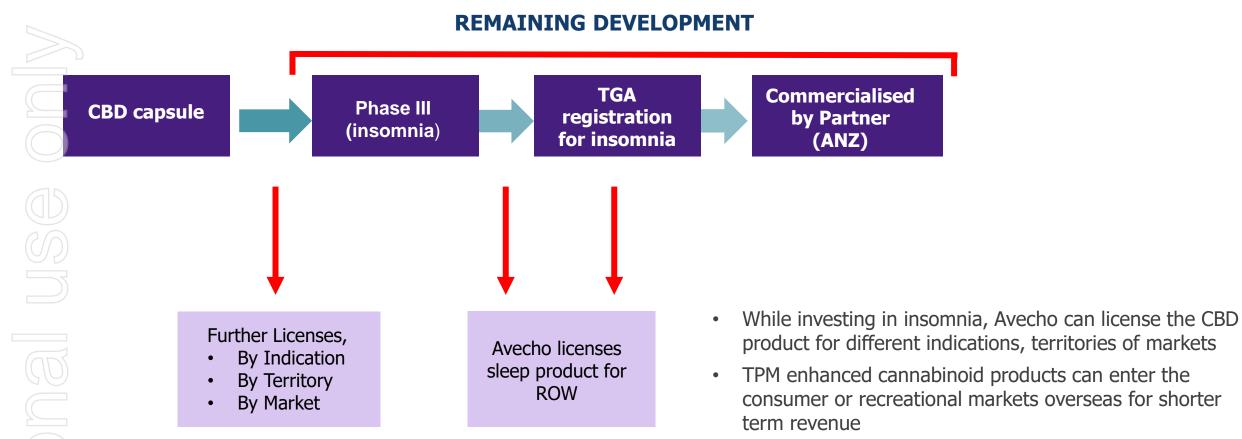
- Study design finalised (complete)
- Service providers actively identified and engaged (complete)
- Ethics approval (complete)
- Clinical supply available for dosing (Q2 2023)
- Interim analysis (Q4 2023)

**Regulatory Submission** – Compile and submit dossier to TGA (2024)

Commercialization – Partner to commercialise product in ANZ; Avecho to license product ROW



#### MAXIMISING VALUE FROM THE CBD PRODUCT DEVELOPMENT



# **CANNABINOID DEALS ALREADY SIGNED**

#### **CBD** capsule for arthritis

- CBD capsule licensed (Dec 2021) for arthritis indication (osteo and rheumatoid arthritis), to Perland (Medterra Pharma)
- Medterra are one of the most successful consumer CBD companies in the United States
- Perland will pay for all development; clinical trials to begin 2023

#### TPM for the US Recreational Cannabis Space

- TPM Licensed (Feb 2022) to Team SAAS for use in a TPM cannabis distillate for the US recreational cannabis market
- Independent research has shown that THC gummies containing TPM work faster and feel stronger than commercially available THC gummies
- Avecho is in further discussions regarding the US recreational cannabis market



More deals to come

# FURTHER PRODUCT PORTFOLIO



# PORTFOLIO OF DIFFERENTIATED CANNABINOID PRODUCTS

Product	Therapeutic Area	Partner (Geography)	Preclinical	Phase I	Phase II or Observation al Study	Phase III	Marketed
CBD Capsule	Sleep	TBD (ANZ)				<b>&gt;</b>	
CBD Capsule	Further indications	TBD			>		
CBD Capsule	Arthritis	Perland (ROW)			•		
CBD Topical Gel	Osteoarthritis	TBD					
CBD Topical Gel	Dermatology	TBD					
THC oil (for use in edibles)	Recreational cannabis	Team SAAS (USA)					•
THC edibles	Pain, anxiety, etc	TBD					
CBD Oil/Topical Gel	Miscellaneous	Comp pharmacy					

# **MULTIPLE CLINICAL TRIALS IN 2023**

Avecho products will be in multiple clinical trials in 2023, the majority funded by third parties.

- Continuous news across multiple products and multiple indications
- Positive results from any of these studies will lead to compelling commercial opportunities.

Product	Therapeutic Area	Funded by	Phase	
CBD Capsule	Sleep	Avecho	3	
CBD Capsule	Osteoarthritis	Perland	1b	
CBD Capsule	Confidential	Lambert Initiative	1b	
CBD Topical Gel	Confidential	Lambert Initiative	1b	
CBD Topical Gel	Osteoarthritis	Avecho/Lambert	2	
CBG Topical Gel	Osteoarthritis	Avecho/Lambert	2	
Ibuprofen Topical Gel	Pain	Perrigo	1b	

### RECENT PHARMA DEALS

#### **Topical Ibuprofen TPM gel licensed to Perrigo for US market**

- Perrigo are a leading global consumer company, with brands including Herron, Nicotinell and OsteoEze
- Perrigo to begin clinical development of Avecho's topical ibuprofen gel for the US market in a pain indication
- Would be the first topical ibuprofen product registered in the US

#### Vitamin K TPM injectable presented to FDA by Athenex

- Athenex is a global pharma company specializing in injectable dosage forms
- Athenex have submitted Avecho's Vitamin K TPM injection to the FDA for comment in a pre-IND
- Favorable FDA feedback will see the execution of a licensing agreement and formal development of the product by Athenex for FDA registration



Vitamin K TPM®



With TPM

Without TPM

#### More deals to come

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# **KEY VALUE DRIVERS 2023**

- PHASE III INSOMNIA TRIAL using oral CBD capsule. Significant re-rate point for the company
- Further **PHASE II OSTEOARTHRITIS** trial using topical CBD gel
- Up to FIVE ADDITIONAL CLINICAL TRIALS funded by third parties using TPM products
- Commercial **PARTNERING/LICENSING** opportunities; new markets, new territories, new indications
- New CANNABINOID PRODUCTS
- Commercial **PARTNERING/LICENSING** opportunities for traditional, non-cannabinoid pharmaceuticals incorporating TPM (*Perrigo, Athenex, more to come...*)

# **COMPANY SNAPSHOT**

Cash \$1.47M<sup>1</sup>

As of 31st March;

Shares 1,838M

Market cap \$16.54M

Options 220.3M



<sup>1</sup> As of 31 December 2022

# **AVECHO MANAGEMENT & BOARD**



**Dr Paul Gavin**Chief Executive Officer

- 20+ yrs Avecho
- Ex- AVE CSO
- Inventor TPM® platform



**Dr Roksan Libinaki**Chief Operating Officer

- 20+ yrs Avecho
- Exec MBA
- Co. Operations and clinical



Melanie Leydin
CFO & Company Secretary

- 25+yrs accounting; 15+ yrs
   Co-Sec
- Inst. of Chartered Accts
- MD Vistra Australia



**Dr Greg Collier** Chairman

- 25+yrs biotech exec experience
- ex-CEO Chemgenex (sold \$200M+)
- 150 publications, 33 patents



**Dr Ross Murdoch**Non-Executive Director

- 25+yrs biotech exec experience
- CEO Extractas
- ex-CEO Avecho (2015-2019)
- ex-SVP Shire Pharma.



**Matt McNamara**Non-Executive Director

- 30+yrs experience healthcare
- 20+yr venture capital
- previous CIO Bioscience
   Managers

# THE ENTITLEMENT OFFER



## RIGHTS ISSUE OVERVIEW

Avecho is launching a non-renounceable entitlement offer to provide existing shareholders the opportunity to invest in driving next steps across our highly promising Phase III clinical program.

- Under the entitlement offer, all eligible shareholders can subscribe for new AVE shares on a 1:1 prorata basis.
- Avecho aims to raise \$11,027,216 to progress its pivotal Phase III clinical trial
- Offer priced attractively at 0.6c, a 26.83% discount to the 15-day VWAP as of 31st March
- Each share will include a 3:2 listed option with an exercise price of 1.2c and an expiry of 3 years
- Eligible shareholders will have the opportunity to bid for further shares
- At the conclusion of the entitlement offer the company will place any shortfall

# **USE OF FUNDS**

The Entitlement Offer will raise up to approximately \$11 million AUD.

#### Manufacturing - \$1.3M AUD

 GMP manufacture of CBD soft-gel capsule for use in Phase III clinical trials and registration batches for formal stability

#### Phase III clinical trial - \$9.35M AUD

 Main study costs including patient recruitment, investigator and site costs in addition to CRO management of the study

#### **Costs of the Entitlement Offer - \$0.35M AUD**

It is expected that the total cost of the Phase III clinical trial will be approximately \$12 million. The company intends to leverage the research & development tax re-imbursement on the trial spend to fund the day-to-day operations of the company in addition to any cost over-run on the Phase III trial.

# **RISKS**

This section discloses some of the key risks attaching to an investment in Avecho. Before investing or increasing your investment in Avecho, you should consider whether this investment is suitable for you having regard to publicly available information and your personal circumstances and following consultation with your professional advisors. The risks in this section are not, and should not be considered to be or relied on as, an exhaustive list of the risks relevant to an investment in Avecho. The risks are general in nature and regard has not been had to the investment objectives, financial situation, tax position or particular needs of any investor.

# **RISKS**

Commercial risk

The development and commercialisation of Avecho's technology is subject to an inherent risk of failure, including the possibility that the products developed by Avecho may fail to demonstrate any material benefit or advancement in brain optimisation or mental health well being, be uncommercial to market or otherwise not commercially exploitable, or fail to achieve the support of physicians, patients or the wider medical industry.

There is uncertainty surrounding the future financial performance of Avecho. Avecho's ability to operate with a profit in the future will depend in part on its ability to successfully commercialise its products. Other factors that will determine Avecho's profitability are its ability to manage costs, execute development and growth strategies, penetrate emerging markets and comply with its debt obligations.

It may be necessary for Avecho to raise additional funds in order to undertake further product development or fund other needs which arise. There is no assurance that such funding will be available to Avecho in the future or that it will be available on acceptable terms.

The technological advancement and mental health awareness industries are competitive and are constantly subject to change. Some of Avecho's competitors have substantially greater financial and human resources than Avecho. Consequently, there is a possibility that other parties will develop new software and service offerings which will compete with or supersede Avecho's products and intellectual property, with resulting adverse effects on Avecho's performance and profitability.

Avecho's success will depend on its ability to protect its intellectual property while operating without infringing the property rights of third parties or having third parties circumvent Avecho's proprietary rights. Such intellectual property may not be capable of being legally protected and may be subject of an unauthorised disclosure or unlawfully infringed upon by third parties. Avecho may incur substantial costs in asserting or defending its intellectual property rights.

Avecho's products involve the storage of its users' confidential, personal and sensitive information. Avecho's business could be materially disrupted by privacy breaches which may impact the security of client information / data, unauthorised hacking, disruption, general misuse or unauthorised disclosure of a user's personal data. While Avecho undertakes measures to prevent and detect the occurrence of such privacy breaches, there is a risk that such measures may not be adequate. Any data breach will need to be reported to the relevant authorities and may cause substantial reputational and financial damage to the Company.

Financial risk

**Future capital needs** 

**Competition risk** 

Intellectual property risk

Loss or theft of data

# rsonal use

# **QUESTIONS WELCOME**

Dr Paul Gavin

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https://ave.freshamplify.com/welcome

