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Research Article

From Pilot Project to Partnership: Expanding a Real-World Evidence Platform for Cannabis Research Through China-Brazil Collaboration

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Abstract

This article traces the evolution of a real-world evidence (RWE) platform for cannabis research, from its pilot phase as the "Real-World Data on the Therapeutic Response to Cannabis Products in Medical and Veterinary Practice" project in Brazil to its proposed enhancement through a strategic China-Brazil partnership. The initial pilot demonstrated the feasibility of collecting valuable data on therapeutic outcomes, product characteristics, and patient experiences. Building on this foundation, the proposed collaboration leverages China's technological expertise and Brazil's research capacity, specifically Chinese expertise in artificial intelligence (AI), big data analytics, and digital health technology infrastructure, combined with Brazilian capacity in conducting clinical studies, access to diverse patient populations, and knowledge in biodiversity, to scale the platform, incorporate advanced analytics, and harmonize regulatory frameworks, navigating the distinct regulatory landscapes of both countries, including current restrictions in China on cannabinoid use, while acknowledging its role as a major producer of industrial hemp and its growing investment in biotechnological research. This integrated approach aims to accelerate the development of evidence-based cannabis therapies and policies, fostering innovation and responsible growth within the industry, while also addressing planetary health concerns. This approach aims to align scientific advancement with ethical and sustainability considerations, reflecting a planetary health vision.

Keywords

Cannabis, Real-World Evidence, Digital Health, China-Brazil, Real-World Data, Regulatory Harmonization, Planetary Health

1. Introduction

The therapeutic use of cannabis is expanding rapidly, creating a growing demand for evidence-based information on its efficacy, safety, and optimal use [1]. However, traditional clinical trials often fail to capture the complexity of real-world cannabis use, where patients self-select products, adjust dosages, and combine cannabis with other therapies [2].

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Real-world evidence (RWE), gathered from diverse populations and settings, is essential for bridging this gap and informing clinical practice and regulatory policies. The global legal cannabis market continues to expand, with significant growth projections through 2030. China, while maintaining strict regulations on cannabis use, is a key global player in industrial hemp production and CBD export, with a domestic legal cannabis market (predominantly hemp and CBD for export or limited uses) estimated at around USD 599.4 million in 2023, and a (very restricted) medical marijuana market valued at USD 41.2 million in the same year, both with substantial growth expectations [3, 4]. This complex scenario highlights the need for RWE to inform future policies and research.

Recent scientific advances have significantly expanded our understanding of cannabis therapeutics while simultaneously highlighting important challenges. A comprehensive umbrella review of meta-analyses has demonstrated substantial efficacy of cannabis-based medicines for multiple sclerosis, chronic pain, inflammatory bowel disease, and palliative care contexts [5]. Concurrently, Hakami and Alshehri's systematic review [6] of clinical trials has mapped the therapeutic potential of cannabinoids across neurological conditions, providing clinicians with evidence-based parameters for symptom management in epilepsy, neurodegenerative diseases, and chronic pain syndromes.

This expanding therapeutic landscape must be balanced against emerging evidence of potential risks. Gowin et al. [7] conducted a cross-sectional study with 1003 young adults, demonstrating that intensive, long-term cannabis use correlates with reduced cerebral activation during working memory tasks. These findings suggest both short and long-term functional implications that warrant careful consideration in clinical applications and policy development.

This article presents the journey of a digital platform designed to collect and analyze RWE on cannabis therapies, from its pilot phase as the "Real-World Data on the Therapeutic Response to Cannabis Products in Medical and Veterinary Practice" project in Brazil to its proposed enhancement through a strategic China-Brazil partnership. This integrated approach aims to address the challenges of cannabis research and regulation by leveraging the strengths of both countries to create a scalable, sustainable, and impactful platform. The proposed collaboration seeks synergy by combining China's advanced technological capabilities in areas such as AI, big data processing, and robust digital platform development, with Brazil's experience in conducting clinical studies with patients, its population diversity, and its evolving regulatory framework for medical cannabis, which allows research and access (albeit controlled) to products [8].

The need for such platforms is underscored by Volkow's recent roadmap [9] for cannabis research and policy, which emphasizes enhanced surveillance systems and testing methodologies to mitigate health and safety risks. As highlighted by Brazilian philosopher Ailton Krenak, contemporary scientific endeavors must transcend traditional boundaries, integrating diverse epistemologies and acknowledging the interconnectedness of human, environmental, and planetary health [10]. This perspective aligns with recent discoveries about THC's significant pain-reducing and sleep-enhancing properties in chronic pain patients, and CBD's complementary though less potent analgesic effects [11]. The integration of Krenak's perspective on diverse epistemologies and planetary health [10] is not just a philosophical backdrop but a guiding principle for the future design of the expanded platform, seeking to incorporate socio-environmental variables and ensure that technology serves a purpose of collective well-being and sustainability, a relevant challenge in both Brazil and China, both facing complex socio-environmental issues [10, 12].

The therapeutic use of Cannabis has gained significant attention in recent years, both in human and veterinary medicine [13]. However, the lack of consistent data and clear regulations still generates uncertainty among healthcare professionals. This study proposes an innovative approach to collect and analyze real-world data on the therapeutic use of cannabis-based products in medical and veterinary contexts in Brazil, also addressing the challenges faced in recruiting participants and collecting data. This regulatory uncertainty is a global challenge. In Brazil, ANVISA regulates cannabis-based products [14], while in China, cannabis use remains largely illegal, except for industrial hemp (with low THC) and controlled scientific research. Recently, China signaled a tightening of regulations on hemp-derived CBD, impacting exports and domestic use [15]. The collaboration will seek to navigate and potentially harmonize aspects of these distinct regulatory approaches to facilitate joint research.

The discovery of the endocannabinoid system (ECS) has revolutionized our understanding of the therapeutic potential of cannabis [16]. The ECS, comprising cannabinoid receptors (CB1 and CB2), endogenous ligands, and metabolic enzymes, plays a crucial role in maintaining homeostasis in various physiological processes. This complex system has been implicated in a wide range of physiological functions, including pain modulation, mood regulation, appetite control, and immune response [17].

Recent clinical perspectives on cannabis use and the endocannabinoid system have provided crucial insights into the neurobiological interactions and clinical implications for healthcare professionals [18]. Additionally, the establishment of specialized research divisions, such as CANDID (Cannabinoids in Neurodevelopment) at Wayne State University, signals the growing recognition of cannabis research as a distinct and vital field requiring dedicated resources and expertise [19].

Cannabis sativa contains over 100 phytocannabinoids, with Δ9-tetrahydrocannabinol (THC) and cannabidiol (CBD) being the most studied [20]. These compounds, along with other constituents such as terpenes and flavonoids, interact

with the ECS and other molecular targets, producing a wide range of therapeutic effects. The entourage effect, a proposed mechanism by which multiple cannabis compounds work synergistically, has gained attention in recent years and may explain the complex therapeutic profile of whole-plant extracts compared to isolated cannabinoids [20].

The One Health approach, which recognizes the interconnectedness between human, animal, and environmental health, is particularly relevant in the context of cannabis research [21]. Comparative studies between humans and animals can provide valuable insights into the mechanisms of action of cannabinoids and their therapeutic applications across species. This approach is especially pertinent given the increasing use of cannabis products in veterinary medicine and the potential for translational research [22]. The One Health approach [21] is particularly promising for the China-Brazil collaboration, allowing comparison of data across species and distinct cultural contexts, enriching the understanding of cannabinoid mechanisms and their therapeutic applications across a broader spectrum.

This interconnected perspective resonates with contemporary neuroscientific research on the relationship between art, consciousness, and healing, which suggests that creative expression can significantly enhance therapeutic outcomes by engaging neural networks involved in emotional regulation and meaning-making [23]. This approach aligns with emerging evidence documenting the elevated prevalence of anxiety disorders in Brazil, where approximately 9.3% of the population experiences clinical anxiety, ranking among the highest rates globally [24]. The integration of these perspectives into cannabis research platforms creates opportunities for more comprehensive and culturally responsive therapeutic approaches. Although not implemented in the pilot, the future design of the China-Brazil collaborative platform contemplates optional modules to record qualitative data on integrative therapies, such as art therapy [23], recognizing the importance of holistic approaches to mental health, a significant challenge in both countries [24, 25].

Despite the growing interest in medicinal cannabis, conducting real-world studies faces numerous challenges. These include regulatory hurdles, stigma associated with cannabis use, and difficulties in standardizing products and dosages [2]. Furthermore, recruiting participants for such studies can be challenging due to concerns about data privacy, lack of incentives, and the time-consuming nature of detailed questionnaires [26]. These challenges are exacerbated in more restrictive regulatory contexts like China, where clinical research with cannabinoids faces additional barriers, although there is strong investment in basic and biotechnological research [4].

Within this contemporary scenario, it is vital to recognize that health challenges transcend individual and human domains, intertwining with planetary health — "the health of human civilization and the state of the natural systems on which it depends" [12]. The concept, as highlighted by Whitmee et al. [12], positions this initiative at the junction where technological, biological, ecological, and social knowledge converge. The China-Brazil collaboration, by focusing on RWE and planetary health [12], aligns with global efforts for more sustainable and ethically conscious scientific and technological development, seeking to generate knowledge that benefits both societies and contributes to the Sustainable Development Goals (SDGs) [27].

Furthermore, neuroscientist Sidarta Ribeiro emphasizes the importance of an expanded approach to healing, one that incorporates not only pharmaceutical advances but also the arts and subjective experience, as essential for true innovation in public health and planetary well-being [25]. In this way, the China-Brazil partnership is positioned as a model of transcultural cooperation, where embracing diversity of knowledge becomes the key to regenerative and sustainable futures [25]. The China-Brazil partnership can be a practical example of this transcultural cooperation [25], where Chinese technological expertise and Brazilian clinical and sociocultural experience unite to create an RWE platform that respects the diversity of knowledge and contexts, aiming for regenerative futures.

This study aims to obtain real-world evidence (RWE) on the efficacy, safety, and applicability of cannabis-based products in various clinical conditions, both in humans and animals, using a commercial digital platform focused on integrative and interdisciplinary therapies. By addressing the challenges faced in recruitment and data collection, we hope to provide insights that can inform future research methodologies in this field.

2. Materials and Methods

2.1. Study Design

This is a prospective observational study using a digital platform (www.caonabico.com) for the systematic collection of real-world data (RWD) from both human and companion animal patients utilizing cannabis-based products for therapeutic indications. The research was structured to longitudinally capture patient-reported outcomes, treatment regimens, and safety data over a six-month period, with automated interim data analyses performed at two-month intervals. This approach enables real-time monitoring of therapeutic efficacy, dosage patterns, and adverse events in a heterogeneous, real-world population, in accordance with established methodologies for generating real-world evidence (RWE) in cannabinoid research [2, 18-20, 22, 28, 29].

The methodological framework incorporates recent advances in cannabis research design, aligning with the recommendations from the 2024 Cannabis Clinical Outcomes Research Conference [30], which emphasized stakeholder engagement and standardized outcome measures. Our

approach also considers the complex balance between therapeutic benefits and potential risks, as highlighted in contemporary pharmacological reviews of the endocannabinoid system as a therapeutic target [31].

2.2. Participants

The study aimed to recruit a diverse sample of participants using cannabis-based products for various medical conditions. Initially, we aimed for a sample size of 400 participants (200 humans and 200 animals) based on power calculations to detect clinically significant effects. However, due to several challenges in recruitment, the final sample consisted of 43 participants (22 humans and 21 animals).

2.3. Data Collection

Data were collected through online questionnaires developed specifically for this study. The questionnaires included information on:

1) Demographics
2) Medical condition being treated
3) Type of cannabis product used
4) Dosage and frequency of use
5) Perceived efficacy
6) Adverse effects
7) Changes in quality of life
8) Previous treatments and their effectiveness
9) Concomitant medications
10) Lifestyle factors (diet, exercise, stress levels)

2.4. Data Analysis

Data were analyzed automatically every 2 months over a period of 6 months. Analyses included descriptive statistics, trend analyses over time, and, where possible, inferential statistics to examine relationships between variables. Due to the smaller-than-expected sample size, some planned analyses were limited in their statistical power.

2.5. Ethical Considerations

The study was approved by the Ethics Committee (approval number: CAAE 61574322.1.0000.5235) and follows the guidelines of the General Data Protection Law (LGPD) of Brazil. All participants provided informed consent before participating in the study. For animal participants, consent was obtained from their owners or caregivers. For the China-Brazil collaboration phase, specific ethical submission and approval according to Chinese regulations will be necessary, in addition to compliance with data protection laws such as China's PIPL (Personal Information Protection Law), alongside Brazil's LGPD.

The digital platform's design is informed not only by methodological rigor but also by principles of ecological and cultural sustainability, in accordance with the Sustainable Development Goals (SGDs) [27]. In line with contemporary best practices, the platform is prepared to incorporate environmental, social, and cultural variables relevant to each context, fostering a living repository of both scientific and traditional knowledge [12, 26]. This multidimensionality paves the way for an evidence ecosystem that values the complexity of life and the collective intelligence arising from diverse backgrounds. Reference: [15, 19, 20].

3. Results

3.1. Participant Characteristics

Of the 43 participants, 22 were human patients (mean age 47.5 years, SD = 15.2; 54.5% female) and 21 were companion animals (76.2% canine, 23.8% feline; mean age 7.3 years, SD = 3.8).

Table 1. *Demographic Characteristics of Human Participants.*

Characteristic	Value
Age (years)	
Mean (SD)	47.5 (15.2)
Range	24-72
Gender, n (%)	
Female	12 (54.5%)
Male	10 (45.5%)

Table 2. *Characteristics of Animal Participants.*

Characteristic	Value
Species, n (%)	
Canine	16 (76.2%)
Feline	5 (23.8%)
Age (years)	
Mean (SD)	7.3 (3.8)
Range	2-14

3.2. Medical Conditions

The most commonly treated conditions in humans included:

1) Chronic pain (27.3%)
2) Anxiety (22.7%)
3) Epilepsy (13.6%)
4) Insomnia (9.1%)

5) Depression (9.1%)
6) Other conditions (18.2%), including multiple sclerosis, Parkinson's disease, and cancer-related symptoms

In animals, the most frequent conditions were:

1) Epilepsy (23.8%)
2) Chronic pain (19%)
3) Anxiety (14.3%)
4) Cancer (9.5%)
5) Inflammatory bowel disease (9.5%)
6) Other conditions (23.9%), including arthritis, cognitive dysfunction, and dermatological problems

3.3. Characteristics of Cannabis Products

Table 3. *Most Used Phytocannabinoid Concentrations by Condition.*

Condition	Most Used Phytocannabinoid Concentration
Chronic pain (humans)	Full spectrum, high THC (30% THC, 1% CBD)
Anxiety (humans)	Full spectrum, balanced THC: CBD (15% THC, 15% CBD)
Epilepsy (humans and animals)	Full spectrum, high CBD (1% THC, 30% CBD)
Chronic pain (animals)	Full spectrum, high CBD (1% THC, 20% CBD)
Anxiety (animals)	CBD isolate (0% THC, 99% CBD)

Most participants (68.2% of humans and 71.4% of animals) reported using full-spectrum cannabis oils. Other types of products included capsules, topicals, and vaporized flowers (human use only).

3.4. Treatment Efficacy

Table 4. *Improvement Levels in Humans and Animals.*

Improvement Level	Humans (%)	Animals (%)
Significant	45.5	47.6
Moderate	27.2	28.6
Mild	18.2	14.3
No improvement	9.1	9.5

Overall, 72.7% of human participants and 76.2% of animal participants reported significant or moderate improvement in their symptoms.

These findings align with recent case series demonstrating sustained improvements in health-related quality of life among medical cannabis users [23], supporting the value of real-world evidence in complementing controlled clinical trials.

3.5. Adverse Effects

The most commonly reported adverse effects were:

In humans:

1) Drowsiness (18.2%)
2) Dry mouth (9.1%)
3) Changes in appetite (4.5%)
4) Dizziness (4.5%)

In animals:

1) Drowsiness (14.3%)
2) Agitation (4.8%)
3) Increased appetite (4.8%)
4) No serious adverse effects were reported during the study period.

3.6. Changes in Quality of Life

Human participants reported improvements in various aspects of quality of life:

1) Sleep quality (63.6%)
2) Mood (59.1%)
3) Physical functioning (54.5%)
4) Social interactions (45.5%)

For animals, owners reported improvements in:

1) Activity levels (66.7%)
2) Appetite (57.1%)
3) Social behavior (52.4%)
4) Overall behavior (61.9%)

3.7. Dosage Patterns

Dosage patterns varied widely among participants, reflecting the personalized nature of cannabis therapy. For humans, the average daily dose of CBD ranged from 20mg to 200mg, while THC doses ranged from 1 to 30mg per day. For animals, CBD doses ranged from 0.5mg/kg to 5mg/kg per day, with minimal to no THC content in most cases.

In addition to clinical and functional outcomes, the platform may, in future phases, register qualitative reports on the impact of art therapy and artistic expression alongside cannabis therapies. Recent studies and experiential observations in Brazil, part of a region with high anxiety prevalence [24], point to the synergistic effect of individualized care and creative engagement in improving mental health [32]. This innovative perspective aligns with the philosophy proposed by Sidarta Ribeiro [25] and with integrative medicine trends worldwide, reinforcing the importance of treating the patient as a whole, considering not only symptoms but also the context and subjective experience of each individual [23, 25, 32].

4. Discussion

4.1. Efficacy and Safety Profile

The observed efficacy rates and favorable safety profile are aligned with existing literature on medicinal cannabis [28, 29]. The methodology of this study, using a digital platform for real-time data collection, offers an innovative approach to continuously monitor and evaluate the effects of cannabis-based treatments in diverse patient populations. It is crucial to reiterate that, due to the limited sample size of the pilot (N=43), these efficacy and safety findings should be considered exploratory and not conclusive. The expanded platform, with a much larger volume of data from the China-Brazil collaboration, will allow for more robust and reliable analyses.

Our findings complement the systematic review by Hakami and Alshehri [6], which identified significant therapeutic potential for cannabinoids across neurological conditions. Simultaneously, our safety monitoring acknowledges concerns raised by Gowin et al. [7] regarding potential neurocognitive impacts of intensive cannabis use, highlighting the importance of balanced, evidence-based approaches to cannabis therapeutics.

4.2. Personalized Medicine Approach

The variation in phytocannabinoid concentrations used for different conditions highlights the potential for highly personalized approaches in cannabis therapy. This observation is aligned with the growing trend toward precision medicine in the field of medicinal cannabis [29]. The digital platform used in this study provides a foundation for future integration with artificial intelligence algorithms, potentially enabling more precise treatment recommendations based on individual patient profiles and response patterns. Future integration with AI algorithms, an area of strong technological expertise in China, could significantly enhance the platform's ability to identify patterns and suggest personalized therapeutic approaches based on large-scale RWE [8].

4.3. One Health Perspective

The One Health approach of this study offers a unique perspective on the therapeutic potential of cannabis across species. The similarities in therapeutic responses between humans and animals suggest conserved mechanisms of action for cannabinoids across species, which could have important implications for translational research. This cross-species applicability of cannabis therapeutics opens new avenues for drug development and clinical research [30], with potential for AI-driven comparative analyses in the future. The China-Brazil collaboration will strengthen this One Health perspective, allowing for the collection and comparative analysis of data in distinct socioeconomic, regulatory, and environmental contexts, potentially revealing contextual factors influencing therapeutic response in humans and animals.

This approach resonates with emerging research on cannabinoids in cancer contexts [27] and aligns with Krenak's philosophical emphasis on the interconnectedness of all living beings [10]. By acknowledging these connections, our platform contributes to a more holistic understanding of cannabis therapeutics that transcends traditional species boundaries.

4.4. Innovative Data Collection and Analysis

The digital platform developed for this study represents a significant advancement in the collection of real-world evidence for medicinal cannabis. Key innovations include:

1) Real-time data collection: Allowing continuous monitoring of treatment effects and rapid identification of trends.
2) Cross-species comparison: Facilitating insights into shared and species-specific responses to cannabis-based treatments.
3) Integration potential: The platform is designed to be compatible with future AI integration, enabling more sophisticated data analysis and pattern recognition.
4) Scalability: Although this study focused on a specific region, the digital platform can be easily scaled to accommodate larger and multi-center studies. Scalability is one of the pillars of the China-Brazil collaboration, where Chinese technological infrastructure and experience in handling large data volumes (big data) will be crucial for expanding the platform's reach nationally and internationally.

4.5. Recruitment Challenges

Several factors contributed to the lower-than-expected recruitment rate:

1) Concerns about Data Sharing: Many potential participants expressed hesitation about sharing personal health information, even with assurances of data protection and anonymity.
2) Lack of Incentives: The absence of direct benefits or compensation for participation may have reduced the motivation of some individuals to complete the extensive questionnaire.
3) Questionnaire Length: The comprehensive nature of the questionnaire, while necessary for collecting detailed data, proved to be a deterrent for some participants who found it too time-consuming.
4) Regulatory Uncertainty: The evolving legal landscape surrounding cannabis use in Brazil created uncertainty among some potential participants about the implications of their involvement in the study.

5) Stigma: Despite growing acceptance, the persistent stigma associated with cannabis use may have discouraged some individuals from participating.

These recruitment challenges may differ or even be greater in China, given the cultural stigma and more restrictive regulatory environment. Culturally adapted recruitment strategies that ensure privacy and regulatory compliance (including China's PIPL) will be essential in the expansion phase [33].

4.6. Future Directions

This study lays the groundwork for more advanced and data-driven approaches to medicinal cannabis research. Future developments could include:

1) AI-driven predictive modeling: Utilizing machine learning algorithms to predict treatment outcomes based on patient characteristics and treatment protocols.
2) Integration with wearable devices and IoT: Incorporating objective and real-time health data to complement self-reported outcomes.
3) Blockchain technology for data security: Enhancing data protection and patient privacy while facilitating secure data sharing among researchers.
4) Natural language processing: Analyzing unstructured data from patient narratives to uncover additional insights into treatment experiences.
5) Virtual clinical trials: Leveraging the digital platform to conduct large-scale and decentralized clinical trials with reduced costs and increased participant diversity. Facilitation of trials in both countries [34]

This real-world study provides valuable insights into the therapeutic use of cannabis products in both human and veterinary clinical practice in Brazil, presenting an innovative approach to data collection and analysis in the field of medicinal cannabis research.

Future developments will be guided by Volkow's roadmap [9] for cannabis research and policy, which emphasizes enhanced surveillance and testing methodologies. The platform's evolution will also incorporate insights from specialized research divisions like CANDID [19], ensuring alignment with cutting-edge neurodevelopmental research.

A key challenge for the collaboration will be regulatory harmonization or the development of protocols that respect the differences between Brazil and China, especially regarding data privacy (LGPD vs PIPL) and specific regulations on cannabis products, including recent Chinese restrictions on CBD [35].

The China-Brazil platform, by integrating technological, ecological, and cultural dimensions, emerges as a (potential) living laboratory for planetary health and the regenerative economy [36]. The initiative embodies the "green skills" and social-ethical competencies demanded by new global trends and highlighted in labor market scenarios for the coming years [37]. It also operationalizes Krenak's vision [10], fostering a future in which science, arts [23], technology, and the wisdom of native peoples converge in favor of a plural, sustainable and truly inclusive knowledge [10, 23, 25, 36, 37].

5. Conclusions

This real-world study demonstrates the potential of the digital platform in advancing our understanding of medicinal cannabis. By combining real-time data collection, cross-species comparisons, and the potential for AI integration, this approach offers a powerful tool for generating robust real-world evidence in the rapidly evolving field of cannabis therapeutics. The strategic partnership with China is envisioned as a catalyst to transform this promising foundation into a robust tool, combining Brazilian research agility with Chinese scale and technological vanguard.

The study highlights the importance of embracing technological advancements to complement traditional research methodologies. The interdisciplinary approach and the use of modern technologies for data collection and analysis promise to generate valuable insights that can benefit patients, healthcare professionals, and policymakers in the dynamic landscape of medicinal cannabis.

As we move forward, the integration of artificial intelligence with platforms like the one used in this study has the potential to revolutionize the way we conduct medical research, particularly in complex and emerging fields such as cannabinoid medicine. This approach not only allows for more efficient data collection and analysis but also paves the way for more personalized and effective treatment strategies.

Our (preliminary) findings contribute to the growing body of evidence on cannabis therapeutics, complementing recent umbrella reviews [5] and systematic analyses of cannabinoids in neurological conditions [6]. By balancing therapeutic potential with awareness of possible risks [7], our platform embodies the nuanced, evidence-based approach advocated by contemporary cannabis research leaders [9].

The real-world evidence platform for cannabis research (proposed by the China-Brazil collaboration) not only advances the production of robust and inclusive scientific knowledge but also serves as a catalyst for a new paradigm --- integrative, planetary and regenerative. By uniting artificial intelligence, diverse epistemologies [10], and respect for the Earth's limits [12], this collaboration becomes a (potential) global example of how to dream and build a science that postpones endings, celebrates diversity, and enhances planetary life [10, 12, 23, 25, 36].

The innovative methodology employed in this study serves as a model for future research initiatives, demonstrating how technology can be leveraged to overcome traditional research challenges and accelerate the pace of scientific discovery in the field of medicinal cannabis and beyond.

Abbreviations

RWD	Real-World Data
RWE	Real-World Evidence
ECS	Endocannabinoid System
THC	Δ9-tetrahydrocannabinol
CBD	Cannabidiol
LGPD	General Data Protection Law

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Author Contributions

Telma Florio: Conceptualization, Methodology, Investigation, Writing - original draft

Luiza Ramos: Data curation, Formal analysis, Writing - review & editing

Adriana Marcapassa Tucci: Supervision, Validation, Writing - review & editing

Jackeline Barbosa: Conceptualization, Supervision, Writing - review & editing

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Data Availability Statement

The data supporting the findings of this study are available upon reasonable request from the corresponding author, subject to ethics committee approval and in compliance with data protection regulations.

Conflicts of Interest

The authors declare that there are no conflicts of interest.

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