PERSPECTIVES IN HYPERTENSION

Full-spectrum CBD oil: a promising ally against hypertension?

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Introduction

Hypertension is a chronic, multifactorial condition marked by persistently high blood pressure, influenced by genetic and lifestyle factors such as smoking, obesity, and inactivity. It often progresses silently but can cause serious damage to vital organs, contributing to cardiovascular and renal diseases. Its global prevalence has doubled from 2009 to 2019, now affecting around 1.2 billion adults (World Health Organization, 2019).

Treatment involves lifestyle changes and antihypertensive medications, but long-term effectiveness can be limited due to tolerance and the need for combination therapies. Although 82 natural compounds have been FDA-approved for hypertension, many patients fail to achieve full blood pressure control. Incomplete understanding of the disease mechanisms highlights the need for further research and innovative therapies (World Health Organization, 2019).

Cannabis-Derived Phytocannabinoids: Historical Use and Cardiovascular Therapeutic Potential

Phytocannabinoids from the Cannabis plant, used medicinally since ancient times in civilizations like China, Egypt, and Greece, are now being investigated for their therapeutic potential. (Rock & Parker, 2021)

Among over 100 phytocannabinoids, cannabidiol (CBD) and Δ9-tetrahydrocannabinol (Δ9-THC) are the most abundant and active. Δ9-THC is psychoactive, while CBD is non-psychoactive, well-tolerated, and predominant in Cannabis sativa. These compounds act via cannabinoid receptors CB1 and CB2, which are part of the endocannabinoid system (ECS), a homeostatic regulator involving endogenous ligands like anandamide (AEA) and 2-AG (Jarvis et al., 2017).

CBD, a lipophilic molecule, crosses biological barriers efficiently and exhibits strong antioxidant and anti-inflammatory properties. Studies have also demonstrated its vasodilatory and hypotensive effects, highlighting its potential for treating cardiovascular diseases (Stanley et al., 2015).

Early Evidence from Cardiovascular Studies

Research on the cardiovascular effects of Cannabis compounds began in the 1970s. Early studies showed that Δ9-THC and CBD could reduce blood pressure in animal models. These findings raised interest in the role of the endocannabinoid system in cardiovascular regulation (Adams et al., 1977). Anandamide, an endogenous cannabinoid, was found to induce complex cardiovascular responses and lower blood pressure and heart contractility in hypertensive rats, effects mediated by CB1 receptors (Malinowska et al., 2001; Varga et al., 1995). Anandamide also reduced blood pressure in angiotensin II-induced hypertension, suggesting ECS interaction with hormonal (Bátkai et al., 2004).

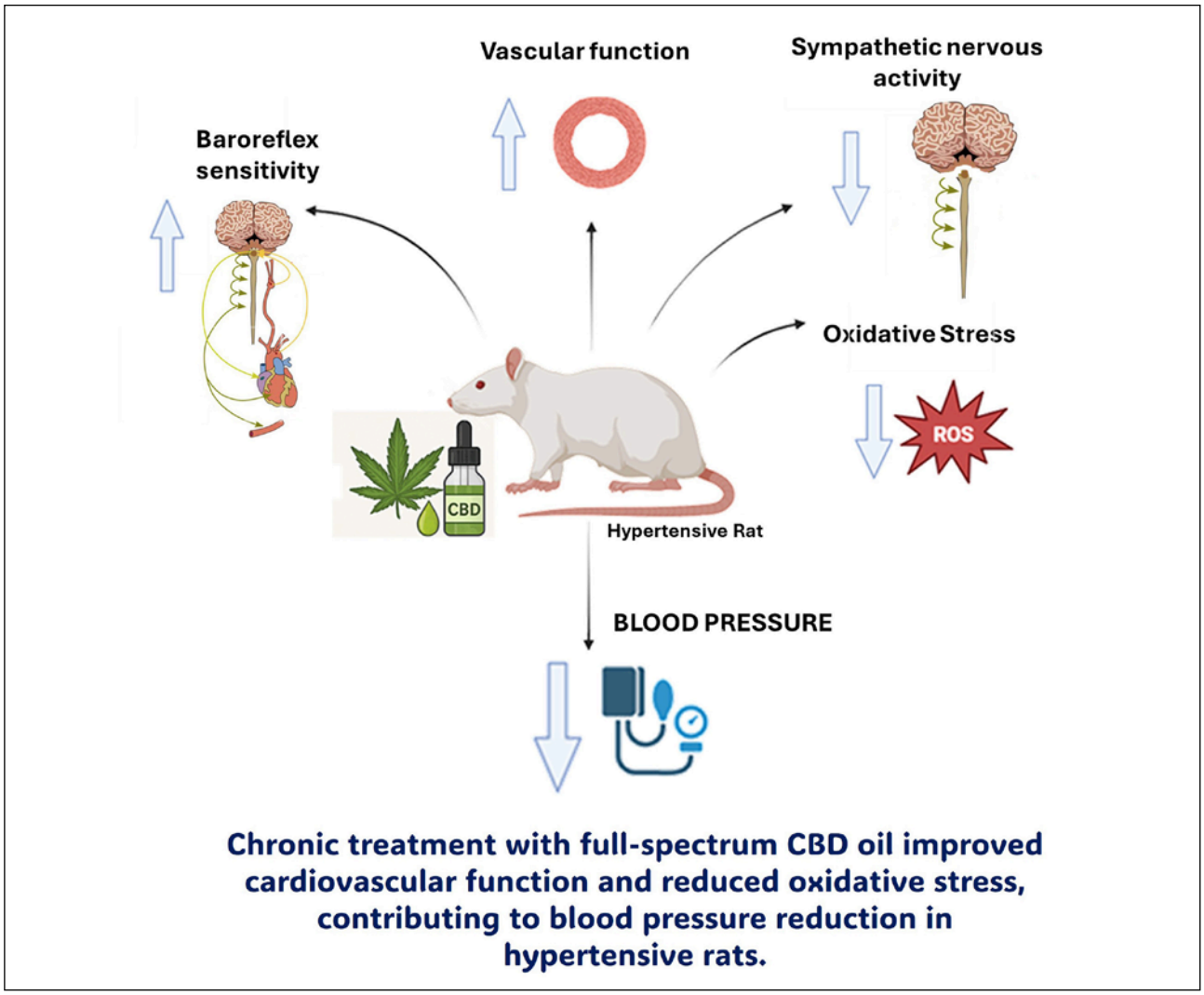
Fitocanabinoide such as Δ9-THC also lowers blood pressure, however its therapeutic use is limited by rapid tolerance. CBD, on the other hand, is non-psychoactive, well tolerated, and does not induce tolerance. In humans, a single 600 mg dose of CBD reduced both systolic and diastolic blood pressure and blunted the response to stress, supporting its potential as an antihypertensive agent (Jadoon et al., 2017).

Our Study: CBD in Renovascular Hypertension

In our study, we evaluated the chronic effects of full-spectrum CBD (a cannabidiol rich extract that also contains a variety of other naturally occurring compounds from the Cannabis sativa plant) in the 2-kidney, 1-clip (2K1C) model of renovascular hypertension, a condition caused by reduced blood flow to the kidneys and driven by high levels of angiotensin II vasoactivity hormone. Male Wistar rats underwent either 2K1C or SHAM surgery. Six weeks later, they received chronic oral treatment with cannabis oil containing CBD (20 mg/kg, administered every 12 hours for 14 days by intragastric gavage). A combination of in vivo, in vitro, and ex vivo techniques was used to assess cardiovascular outcomes.

The results were promising. chronic full-spectrum CBD oil treatment significantly reduced blood pressure, improved vascular function, and decreased oxidative stress in the arterial wall, factors strongly linked to hypertension progression. Furthermore, CBD enhances baroreflex sensitivity, a brain-controlled mechanism that helps the heart and blood vessels respond to changes in blood pressure, and reduces sympathetic nervous system overactivity, which is commonly elevated in hypertensive states (Flôr et al., 2024).

These findings suggest that full-spectrum CBD oil possesses multi-target antihypertensive properties, contributing to blood pressure reduction through mechanisms involving improved autonomic regulation, vascular tone, and oxidative balance. Although further clinical investigations are needed to confirm these effects in humans, our results support the therapeutic potential of full spectrum CBD oil in hypertension management, particularly in cases resistant to conventional treatment.



Chronic treatment with full-spectrum CBD oil improved cardiovascular function and reduced oxidative stress, contributing to blood pressure reduction in hypertensive rats.

Importantly, our study was made possible through collaboration with ABRACE, a nonprofit association that produces cannabis oil at low cost, thereby ensuring accessibility for the Brazilian population. This partnership underscores the vital role of community-based organizations in advancing scientific research and promoting equitable access to emerging therapies.

By bridging scientific innovation with social commitment, this research highlights CBD's therapeutic promise and advocates for broader public and governmental engagement in the discussion around medicinal Cannabis. Such efforts are essential to expand access and improve outcomes for the millions of individuals affected by hypertension in Brazil and globally.

Final remarks

Chronic full-spectrum CBD oil treatment demonstrates significant antihypertensive effects by enhancing baroreflex sensitivity, improving vascular function, reducing sympathetic nervous system activity, and mitigating arterial oxidative stress. These findings position CBD as a promising candidate for the treatment of renovascular hypertension and its associated cardiovascular complications.

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