Cannabidiol As A Potential Treatment For Heart Failure With Preserved Ejection Fraction

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INTRODUCTION

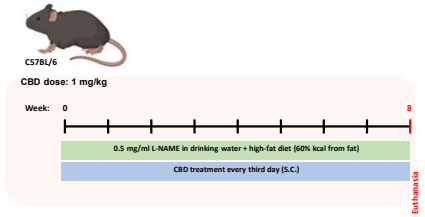
Heart failure with preserved ejection fraction (HFpEF) is a multifactorial syndrome associated with multiple non-cardiac comorbidities that contribute to the pathophysiology of the disease. HFpEF now makes up approximately 60% of HF cases, which highlights the need to develop additional evidence-based therapies. Cannabidiol (CBD) has shown beneficial cardioprotective effects preventing pathological changes as well as anti-inflammatory and antifibrotic properties, however, the mechanisms involved have not been fully defined.

AIM

Cannabidiol may attenuate the pathological cardiac remodeling in HFpEF.

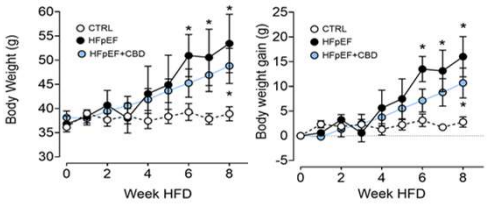
METHOD

We used an HFpEF mouse model, which was developed by a double-hit by feeding high-fat diet and Nω-nitro-L-arginine methyl ester (L-NAME) in drinking water for 8 weeks [1]. A group of HFpEF mice was administered 1 mg/kg of cannabidiol every third day during 8 weeks and this group was compared against a control group of healthy mice and HFpEF mice group. Heart tissue was collected to evaluate cardiac structure and molecular markers of pathological remodeling and inflammation.

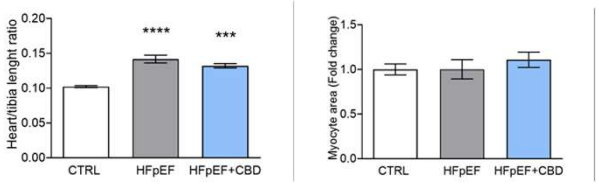


RESULTS

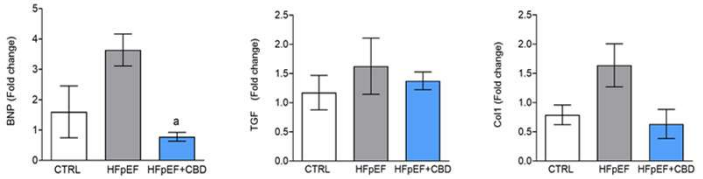
Cannabidiol reduces body weight gain



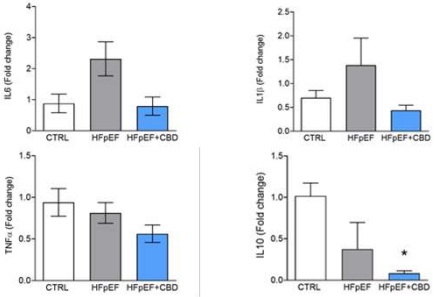
Cannabidiol does not alter heart hypertrophy



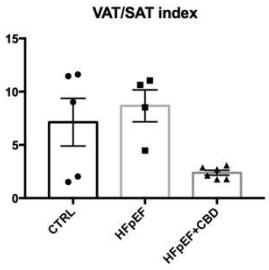
Cannabidiol prevents cardiac remodeling



Cannabidiol prevents inflammation



Cannabidiol reduced VAT/SAT index



CONCLUSIONS

Preliminary results have shown the potential of cannabidiol to counteract appearance of HFpEF in mice. Nevertheless, more detailed studies are suggested to understand the underlying mechanisms of cannabidiol protection in HFpEF.

REFERENCES

[1] **Schiattarella, G. G., *et al.*** (2019). Nitrosative stress drives heart failure with preserved ejection fraction. Nature, 568(7752), 351–356. https://doi.org/10.1038/s41586-019-1100-z.

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