

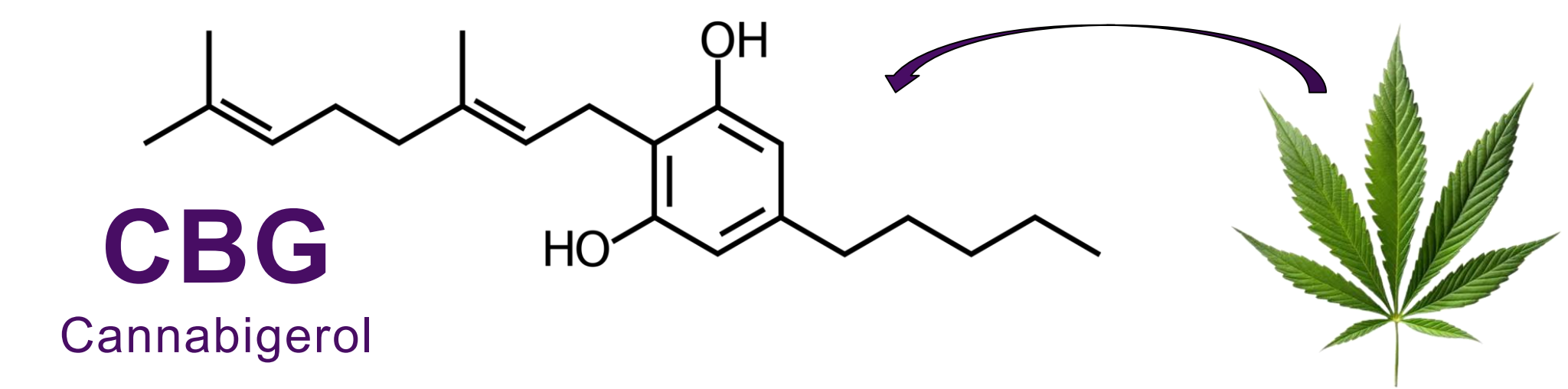
Cannabigerol (CBG) attenuates neuroinflammation and preserves cerebral metabolism in a 3xTg-AD animal model: a PET imaging study

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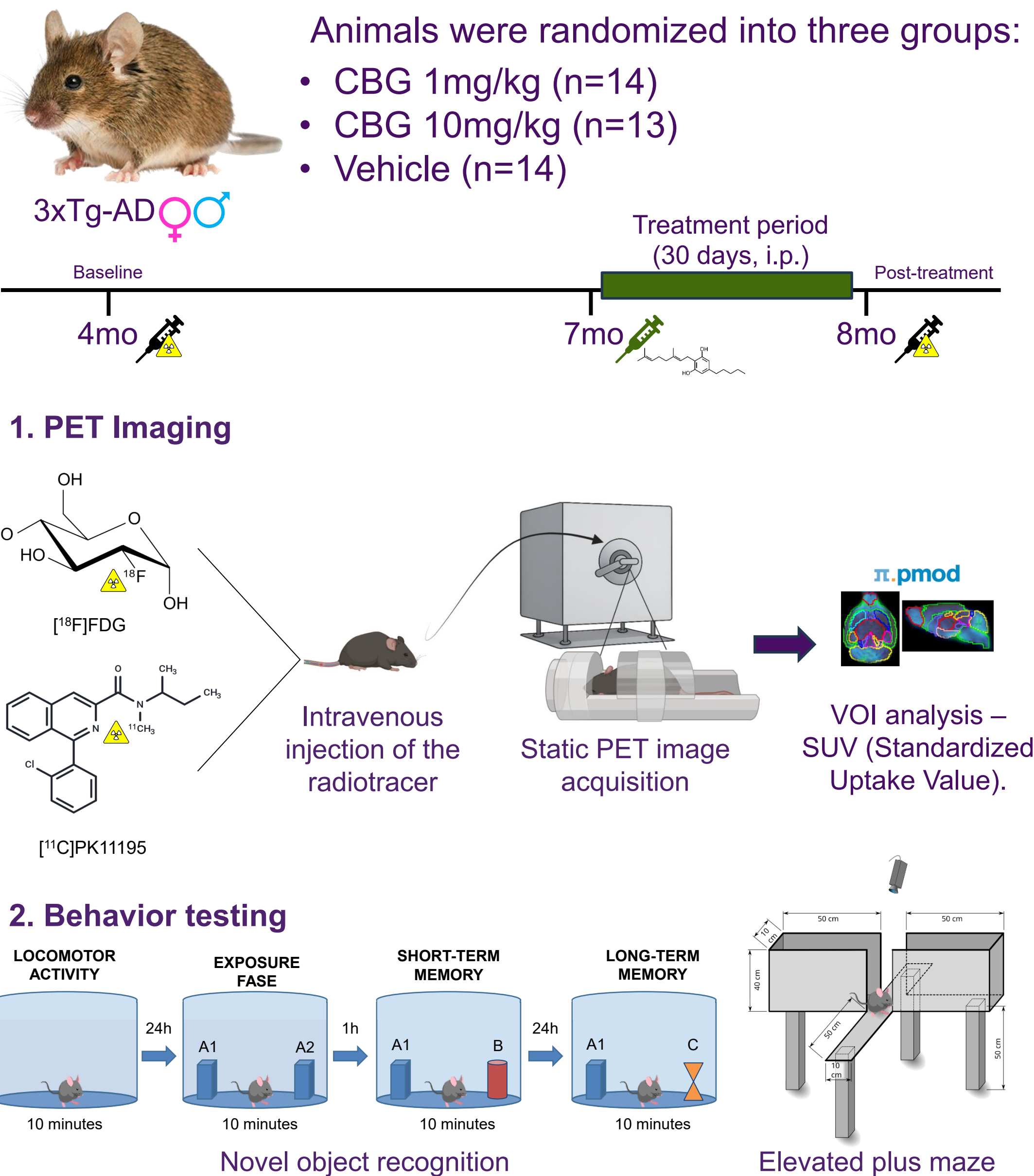
This study evaluated the effects of subchronic cannabigerol (CBG) treatment in 3xTg-AD mice using longitudinal PET at 4 and 8 months of age. The 10 mg/kg dose was associated with increased [¹⁸F]FDG uptake across multiple brain regions, suggesting enhanced cerebral metabolic activity, whereas the 1 mg/kg dose showed lower [¹¹C]PK11195 uptake at 8 months, consistent with a potential attenuation of neuroinflammation. Overall, these preliminary findings suggest dose-dependent effects of CBG on cerebral metabolism and neuroinflammatory processes, warranting further investigation.

INTRODUCTION

Given the complex pathophysiology of Alzheimer's Disease (AD) and the demand for innovative therapies, Cannabigerol (CBG) emerges as a potential therapeutic candidate. This non-psychoactive phytocannabinoid showed anti-inflammatory, neuroprotective, and antioxidant effects in *in vitro* and *in vivo* studies, but still has not been explored in animal models of AD. The aim of this study was to evaluate the longitudinal effects of CBG in an animal model of AD using positron emission tomography (PET).



METHODS



RESULTS

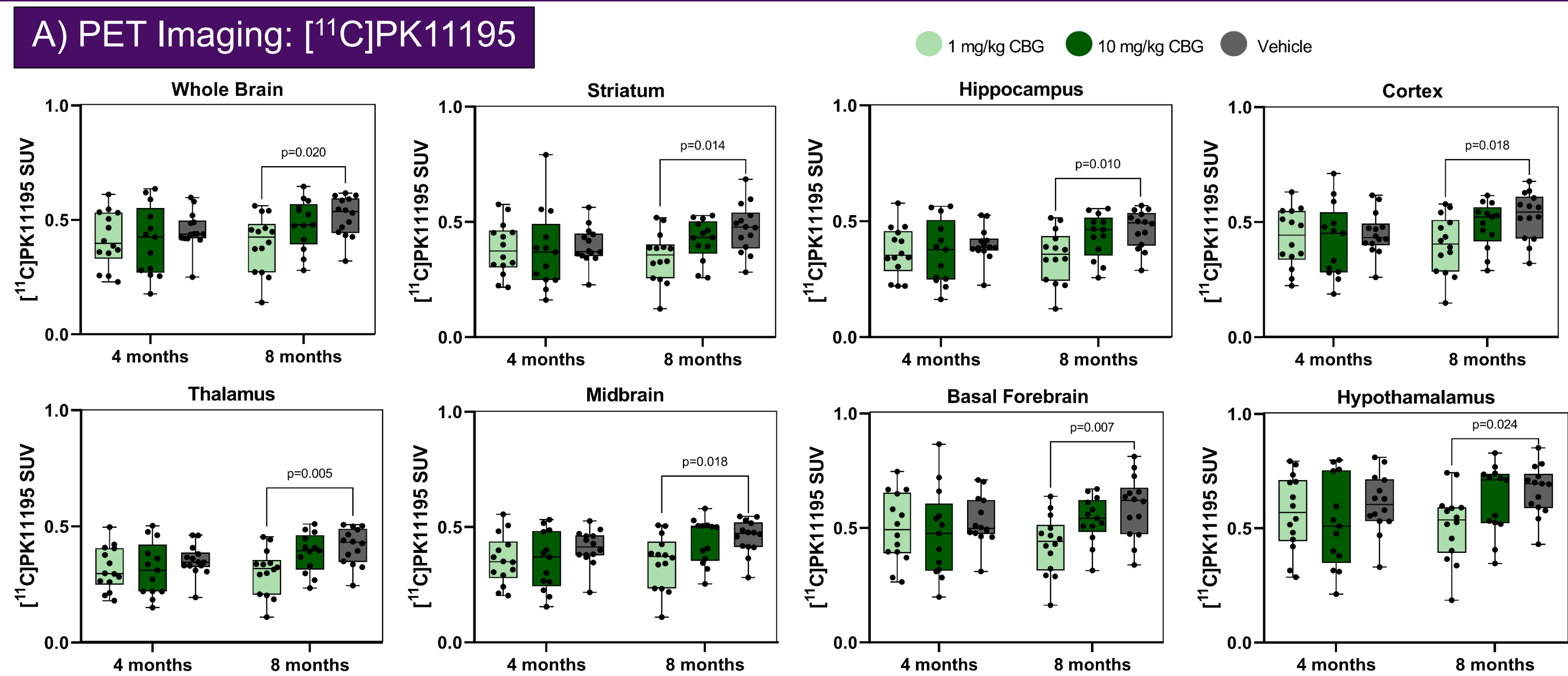


Figure 1. [¹¹C]PK11195 uptake (SUV) in brain regions of 3xTg-AD animals treated with 1 mg/kg CBG, 10 mg/kg CBG or vehicle (n=13-14). At 8 months of age, 1 mg/kg CBG group showed lower uptake than vehicle animals in the whole brain, striatum, hippocampus, cortex, thalamus, midbrain, basal forebrain, hypothalamus, suggesting a treatment-related reduction in the neuroinflammatory process.

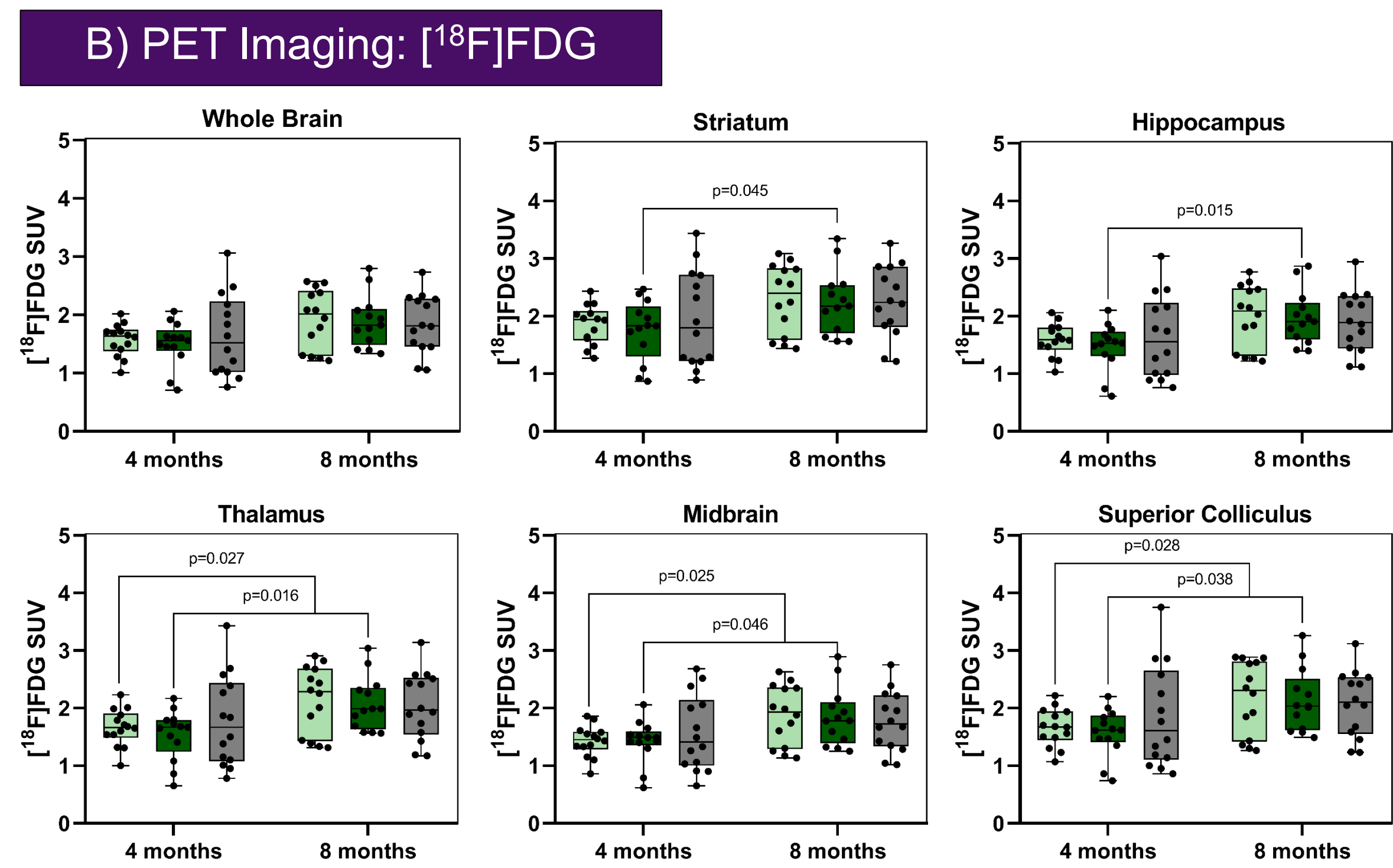


Figure 2. [¹⁸F]FDG uptake (SUV) in brain regions of 3xTg-AD animals treated with 1 mg/kg CBG, 10 mg/kg CBG or vehicle (n=13-14). From 4 to 8 months of age, animals treated with 10 mg/kg CBG exhibited significant increases in uptake within the striatum, hippocampus, thalamus, midbrain, and superior colliculus. In the 1 mg/kg CBG group, increased uptake was restricted to the thalamus, midbrain, and superior colliculus.

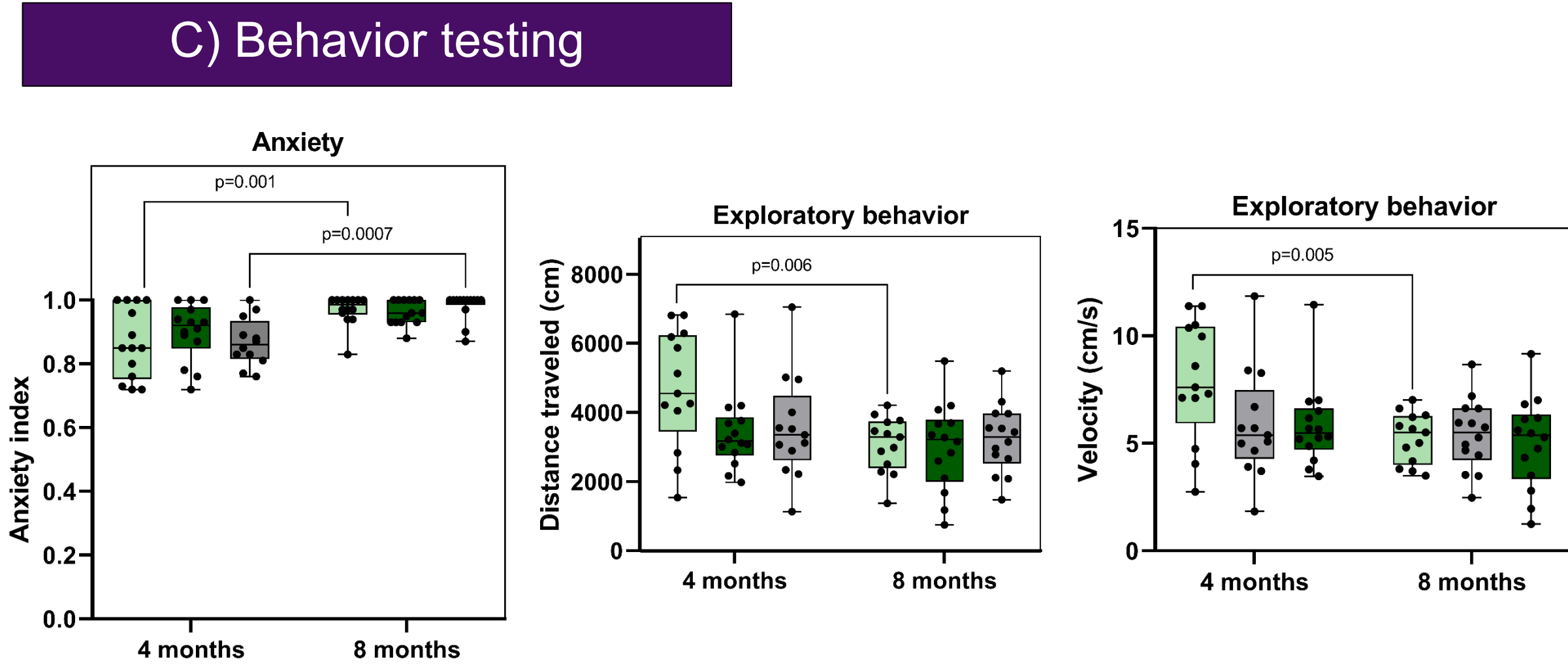


Figure 3. Anxiety index, velocity, and distance traveled of 3xTg-AD animals treated with 1 mg/kg CBG, 10 mg/kg CBG or vehicle (n=12-14). From 4 to 8 months of age, the anxiety index increased in the vehicle and 1 mg/kg CBG groups. A reduction in velocity and distance traveled was restricted to the 1 mg/kg CBG group.

CONCLUSION

In conclusion, these findings suggest dose-dependent effects of CBG in 3xTg-AD animals. The 1 mg/kg dose was associated with lower [¹¹C]PK11195 uptake across several brain regions, whereas the 10 mg/kg dose showed broader increases in [¹⁸F]FDG uptake. In addition, the vehicle and 1 mg/kg groups exhibited an increased anxiety index, with reduced locomotor activity observed only in the latter. Further studies are needed to clarify the biological significance of these findings.

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