Examining the Potential Role of the Central Amygdala on the Therapeutic Effects of Psilocybin

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Introduction

In 2018, FDA approved psilocybin as a breakthrough therapy due to its therapeutic effects in treatment-resistant depression[1-2].

A brain region of interest when considering these psychiatric disorders is the **central amygdala (CeA):**

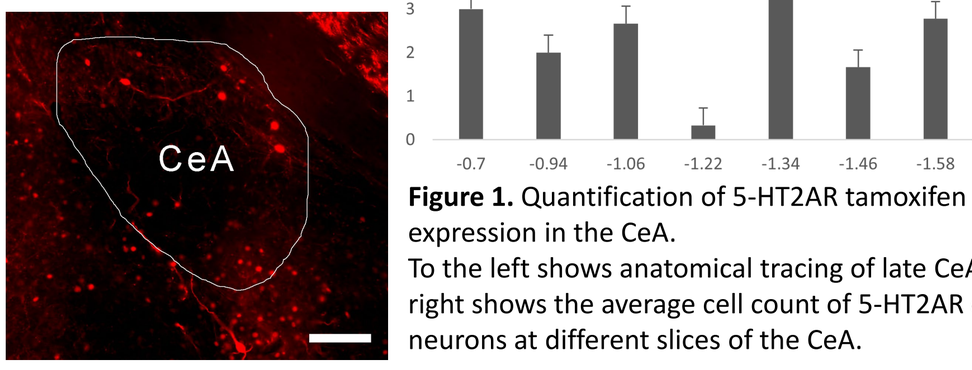
- The amygdala's main output nucleus.
- Implicated in the attachment of emotional relevance to internal and external stimuli.
- Has three sub-compartments: capsular (CeC), medial (CeM), and lateral (CeL).
- Micro-circuits within the CeA are involved in fear extinction[3].

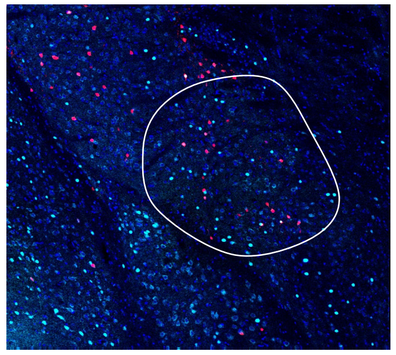
Psilocin is the active metabolite of psilocybin and is thought to exert its hallucinogenic and therapeutic actions via 5-HT2A receptors which are robustly expressed in the PFC[4-6].

Little has yet been discovered on the CeA role in psilocin's therapeutic action.

Results

Psilocin can selectively and differentially modulate activity in the different sub-compartments of the CeA





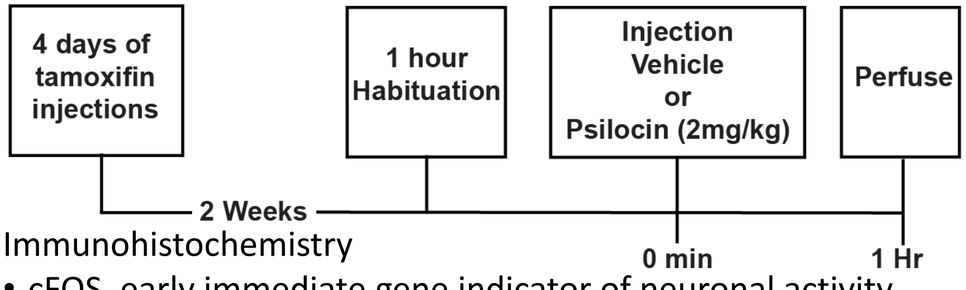
5HT2A Expressing cells in CeA

Figure 2. 5-HT2AR cFOS stained expression in the CeA.
To the left shows an anatomical tracing of CeA. Cell nuclei are stained for DAPI (blue). cFOS expression (cyan) 5-HT2AR expression (red).

Figure 1. Quantification of 5-HT2AR tamoxifen induced expression in the CeA.
To the left shows anatomical tracing of late CeA and to the right shows the average cell count of 5-HT2AR expressing neurons at different slices of the CeA.

Methods

5-HT2AR-eGFP-CreERT2xAi9 transgenic mice (*N* = 15)



Immunohistochemistry
- cFOS, early immediate gene indicator of neuronal activity

Discussion

Along with previous findings in our lab, this further evidence suggests that different microcircuits within the amygdala complex might be involved in psilocin's mechanism of action. Additionally, we found majority of 5-HT2AR neurons were in the CeM. Further research could look at the activation of this neuronal population *in vivo.*

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Scan Me!

References →