Contexual Fear-Conditioning in TUF1 KO Mice.

Max A. Zimbel, Jiva Demova, and Jonathan Gewirtz
University of Minnesota
Department of Psychology

Introduction

•Neuropeptides are neural signaling molecules that can modify affective states. (Rotzinger, 2010)

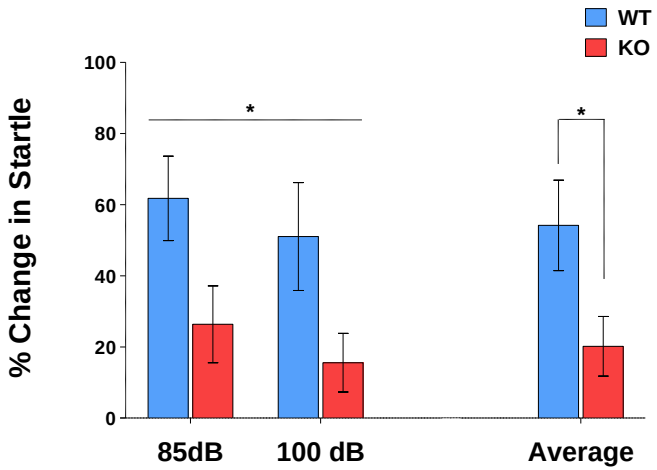
•The unidentified factor 1 (TUF1) is a novel neuropeptide (Tran, 2010) with high concentration in the amygdala, hippocampus, hypothalamus, and the endocrine tissue. Evidence suggests that it is secreted, and binds with low affinity to the p75 receptor. TUF1 is believed to be involved in stress regulation and may have a neuroprotective function

•Contextual conditioning is a good model for anxiety disorders. Patients with PTSD exhibit abnormalities to contextual cue conditioning, but not explicit conditioning (Grillion, 1999)

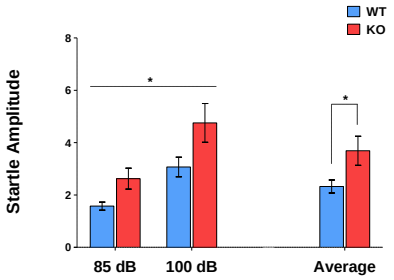
•Using TUF1 KO mice, I studied behavioral changes in contextual conditioning compared wild type mice.

Methods

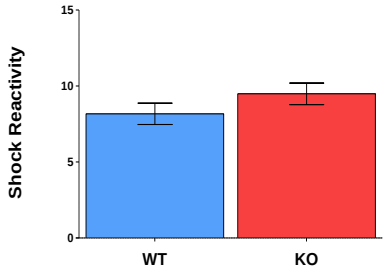
5 days of testing
Baseline: 2 days; 20 startle stimuli at 85 and 100 dB, 30s ITI
Conditioning: 2 days; 16 pairings of shock and context, variable ITI (average= 2 minutes), shocks are 0.5s at 0.4 mA
Test day: 20 startle stimuli at 85 and 100 dB, 30s ITI



Compared WT mice, KOs show lower levels of contextual fear irrespective of which dB level tested.



KO mice show higher startle amplitutde compared to WT



KO mice showed no shock reactivity difference compared to WT

Conclusion

• Differences in contextual fear can reflect impaired memory acquisition, consolidation, or expression; abnormalities in hippocampus **(Rudy, 2004)**

•Baseline startle difference can reflect higher anxiety levels in KOs or differences in sensory processes **(Davis, 2006)**

•No differences in shock reactivity: Differences in contextual fear conditioning cannot be explained by differences in pain thresholds

Discussion

- Important to better understand biological basis of fear conditioning as a model for anxiety disorders
- Important to understand what signaling molecules mediate aversive/fear memories
- By better understanding the function of TUF1, we may be able to develop new treatments for anxiety disorders.

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Contact information:
pasc0125@umn.edu

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