Introduction

- Oxytocin (OXT) is a pro-social neuropeptide with anxiolytic properties, which might be a potential therapeutic agent for social anxiety disorder and post-traumatic stress disorder.

Aim of the study

- To determine whether central (icv) OXT facilitates social and cued fear extinction via the OXTR receptor (OXTR).

Methods

- Social fear induced by social fear conditioning (Toth et al., 2012)
  - 30 s 3 min
  - 3 min cage with conspecific (unconditioned mice - uc)
  - Foot shock at social contact (conditioned mice - c)

- Assessment of social investigation as indicator of social fear and fear extinction 24h later in the home cage
  - 3 min stimulus 3 min inter-stimulus interval

- Cued fear induced by cued fear conditioning (Toth et al., in revision)

- Assessment of freezing as indicator of cued fear and fear extinction 24h later in a different context

Treatment:

- Veh/OXT infused icv 10 min prior to test
- Veh/OXTR antagonist (OXTR-A) infused icv 40 min prior to test

Results

- OXT reverses social fear (left) through the OXTR (right)
- OXT impairs cued fear extinction (left) through the OXTR (right) in rats
- Low dose of OXT impairs cued fear extinction in mice
- Home cage locomotion

Summary

- OXT completely reversed social fear
- OXT impaired cued fear extinction both in rats and mice
- A high dose of OXT decreased freezing in mice due to an increase in locomotor activity
- Both the facilitatory effect on social fear extinction and the impairing effect on cued fear extinction were mediated via effects through OXTR
- OXT represents a therapeutically promising approach in patients with deficits in social functioning, such as social anxiety disorder and autism spectrum disorders. However, in patients where the fear does not involve a social component, such as post-traumatic stress disorder, OXT may delay fear extinction

References:

Toth, I., Neumann, I.D. Slattery, D.A. (in revision) Central administration of oxytocin receptor ligands affects cued fear extinction in rats and mice in a time-point dependent manner. Psychopharmacology

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