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MEETING ABSTRACT Open Access

Enhanced fear expression in a psychphathological mouse model of trait anxiety: pharmacological interventions

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Background

The propensity to develop an anxiety disorder is thought to be determined by genetic and environmental factors. Here we investigated the relationship between an extreme genetic predisposition to trait anxiety and experience-based learned fear in a psychopathological mouse model.

Methods

Male CD-1 mice selectively bred for either high (HAB) or normal (NAB) anxiety-related behaviour on the elevated plus maze were subjected to classical fear conditioning.

Results

Both mouse lines learned to fear an initially neutral stimulus (CS) being indicated by increasing freezing levels. 24 h later, HAB mice displayed more pronounced freezing responses to both the context and cue CS compared with NAB mice, suggesting that trait anxiety determines stronger fear memory and/or a weaker ability to inhibit fear responses in the HAB line. Interestingly, already 1 h and 6 h after fear conditioning, freezing levels were high in HAB mice but not in NAB mice. The enhanced fear response of HAB mice was attenuated by treatment with either the $\alpha_{2,3,5}$-subunit-selective benzodiazepine partial agonist L-838,417, corticosterone or the selective neurokinin-1 receptor antagonist L-822,429.

Conclusions

Overall, the HAB mouse line may represent an interesting model (i) for identifying biological factors underlying misguided conditioned fear responses and (ii) for studying novel pharmacotherapies for patients with anxiety disorders, including post-traumatic stress disorder and phobias.

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