Urine Anxiety Chronic Pain Model Abstract

Abstract

Chronic stress is linked closely with mood disorders such as anxiety and depression. These behaviors can be measured to understand chronic pain more effectively. Previous studies have shown that similar pathways are used to treat both chronic pain and chronic anxiety. In this study a predatory stress model offers a non-physical pain stimulus as an avenue to invoke an anxiety response. To mimic a predatory situation, the behavior of BALB/c mice in response to regular exposure to coyote urine was analyzed. The use of a non-physical stressor elicits a similar response to the stress that an adult experiences daily. This model offers new insight into a different type of chronic pain and its response to treatment. The common side effects of extended stressors, anxiety and depression, are easily measured in the behavior of mice. This study aimed to first identify if coyote urine could be used to elicit a predatory response that is consistent with physical chronic pain models. These responses would then be tested against the effects of a cholecystokinin B receptor antagonist. Using an antagonist of CCKBR offers a non-opioid treatment for chronic anxiety. The CCKBR is shown to be up-regulated during chronic neuropathic pain models and by blocking this ligand, it's hoped to decrease pain responses. Our study finds trends that support CCKBR as an avenue to reduce mood disorders in mice experiencing chronic anxiety.

Three anxiety behavior models were used in this study; the Light/Dark Box, the Sucrose Test, and the Zero Maze. These anxiety models assess the rodents behavior against normal performance. Anxious and depressive moods often result in the mice varying from the baseline in vehicle groups and returning to baseline for treated. Behaviors such as grooming, rearing, aversion to light, and aversion to novel areas were all analyzed.

The coyote urine study was a short chronic anxiety model conducted over five weeks. The findings suggest trends that the coyote urine did result in chronic anxiety. The Chronic Anxiety Urine Paradigm shows a variance from baseline for both the vehicle and treated groups. The Light/Dark Assay shows the effects of CCKBR antagonist bringing the treated mice back to baseline levels. The study brings light to the effectiveness of coyote urine as a model while also suggesting the success of CCKBR antagonist as a novel therapeutic for treating both chronic pain and chronic stress.