

Stephanie Akosa

Development of Psychological Markers for
Motivational Dysfunctions through the use of
Tetrabenazine and Electroencephalograms in a
Female Rat Model

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Sciences

Depression is an illness that is increasingly rampant in our society. With its prevalence, various drugs have become commonplace for treatment. Many of these drugs are serotonin reuptake inhibitors, or SSRIs. These drugs are able to mitigate symptoms of depression such as rumination and anxiety. However, they are not successful in treating the amotivation and anergia that are seen in these patients. In order to investigate which drugs will be the most successful in treating the symptoms of depression, it is important to develop a model that can accurately represent depression in humans. The goal of the present study was to use female rats to develop EEG markers that are relevant to the psychophysiology of female patients with depression. A within subjects control design with tetrabenazine (TBZ) as the independent variable was used on a group of 8 female rats. TBZ works by inhibiting the vesicular monoamine transporter 2 (VMAT2) to deplete the dopamine stores within the rats. Each rat was administered TBZ/Vehicle or Vehicle/Vehicle during 2 consecutive weeks (one treatment per week). Readings were taken each week from the frontal, parietal, and motor regions to investigate the effect that TBZ has on these regions and determine whether they are comparable to the neural state of female humans with depression. It was found that female rats have a peak at approximately 7-8 Hz that is suppressed when TBZ is administered. These findings can be used as a foundation for further studies that investigate how specific pathways are responding to administration of TBZ, and potentially how they are affected in those with depression.