GABAergic Neurons Correlate to Auditory-Induced Stress Behavior in Mice

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A common feature in stress- related disorders is maladaptive feeding, such as undereating or overeating (Wei et al., 2019). The mechanisms of how stress influences feeding behavior remains elusive. GABAergic Ventral Pallidum (VP) neurons mediate approach motivation and are responsive to stressors (Hou et al., 2020; Stephenson-Jones et al., 2020), thus these neurons may be involved in stress-induced changes in feeding behaviors. Using fiber photometry, reggaeton music, and different food choices (condensed milk, pretzels, tonic water with quinine, and water), we seek to better understand the role of GABAergic VP neurons during eating sessions and stressful situations caused by auditory stress. Auditory stress elicited different types of consummatory responses, which is akin of how people can exhibit different consummatory behaviors in response to stress. Animals tried to fight the threat rather than to overeat, decreasing consumption. These results raise the question of how long animals would have to be under auditory stress to start using other methods of stress relief like overeating. GABAergic VP neurons exhibited sustained inhibitory signals in anticipation of palatable stimuli, consistent with the hypothesis that these neurons encode reward approach. GABAergic VP neurons exhibited excitatory responses to bitter tastants consumption, which suggests that these neurons encode sensing of unpleasant tastants, which could then influence consummatory motivation. Therefore, GABAergic VP neurons are not correlated to auditory induced stress behavior in mice; however, if we wanted to solidify our conclusion, we would have to take an optogenetic approach to our research project.

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