GABAergic Influences Increase Ingestion across All Taste Categories

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Abstract

Each year six million people are diagnosed with generalized anxiety disorder (GAD) and around half of these people are given anti-anxiety drugs containing benzodiazepines. Benzodiazepines have their effect through GABA<sub>A</sub> receptors to increase the affinity of GABA in the brain. Chlordiazepoxide (CDP) was the first synthesized benzodiazepine and is most commonly used in brain research. The parabrachial nucleus (PBN) has been shown to be an important site of action for the effects of benzodiazepines on ingestive behavior. Previous research has resulted in hyperphagia and hyperdipsia which are common side effects of benzodiazepines. Taste reactivity tests suggest that benzodiazepines increase the appetitive qualities and decrease the aversive qualities within various taste categories. The majority of previous research has focused primarily on the palatability of sweet stimuli. The objective of this study was to examine not only appetitive stimuli but also the effects of CDP on aversive stimuli. Forty-eight male Sprague-Dawley rats were tested under counterbalanced CDP and saline conditions. All rats were exposed to one of three different concentrations of six taste stimuli. Complex microstructural analyses were conducted to examine meal analysis (meal licks and meal duration), licking pattern analysis (number of bursts, size of bursts, burst duration and pause duration), and taste-mediated analysis (first minute licks and average rate). Results from the present study show that CDP increased the appetitive qualities across all taste categories, primarily through changes in taste-mediated variables. This supports previous research that benzodiazepines change the taste palatability all taste categories.