

Neurobiology of Weight Change Following Chronic Stress: The role of Pituitary Adenylate Cyclase-Activating Peptide (PACAP) and the Bed Nucleus of the Stria Terminalis (BNST)

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Exposure to chronic stress is an important factor underlying many anxiety disorders, and has widespread behavioral effects including a reduction in food and water intake and subsequent decrease in weight gain. We have previously shown that chronic stress is associated with a substantial increase in pituitary adenylate cyclase-activating peptide (PACAP) within the Bed Nucleus of the Stria Terminalis, an area that mediates fear- and anxiety-like behavior. We have also provided strong evidence that activation of PACAP within the BNST mediates anxiety-like behaviors as shown by increased startle responding and decreased exploratory behavior. Here we extend these findings and include a role for BNST PACAP in influencing the changes in feeding behavior observed following one week of chronic variable stress in rodents. The current study shows that central nervous system infusion of a PACAP antagonist attenuates stress-induced reductions in weight gain and that lesions to a subregion of the BNST have a similar effect. These findings suggest that PACAP activation is necessary for stress-induced anorexia and that the BNST is a likely site of action for these effects.