EXTRA-HYPOTHALAMIC CRF-1 RECEPTOR MECHANISMS IN A MODEL OF BINGE-LIKE PALATABLE FOOD CONSUMPTION IN FEMALE RATS

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Purpose: The present study evaluated the effect of the corticotrophin releasing factor (CRF)1 receptor antagonist R121919 and the corticosterone synthesis inhibitor metyrapone in female rats, in which binge eating for highly palatable food was evoked by frustration stress and cycles of food restrictions. Methods: We used 4 groups of rats that were first exposed or not exposed to repeated intermittent cycles of regular chow food restriction during which they were also given intermittent access to high-caloric palatable food. On the test day, we either exposed or did not expose the rats to the sight of the palatable food for 15 min, without allowing access to it (frustration stress) before assessing food consumption for 2 h. Results: We found that systemic injections of the CRF1 receptor antagonist R121919 but not of the metyrapone blocked binge-like eating behavior. Moreover, corticosterone injection did not induce binge eating in non-stressed rats. Restricted and stressed rats showed up regulation of CRH1 receptor mRNA signal in dorsal BNST and in CeA but not in PVN. Injection of CRF receptor antagonist D-Phe-CRF(12– 41) in CeA blocked binge-like eating behavior. Conclusions: These findings demonstrate that extra-hypothalamic CRF1 receptors, rather than those involved in endocrine functions, are involved in binge eating. Selective antagonism at CRF1 receptor may represent a novel pharmacological treatment for bingeing-related eating disorders.

Key words: Binge eating, stress, food restriction, CRF1 receptor antagonist, R121919, BNST, CeA, metyrapone, corticosterone