

Abstract View

AGE-RELATED CHANGES OF STRIATAL DOPAMINE D₂ RECEPTOR (D₂R) BINDING IN OBESE (FA/FA) AND LEAN (LE) ZUCKER RATS REVEALED BY POSITRON EMISSION TOMOGRAPHY (PET)

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Obesity is likely to result from the complex interaction of genes and environment (Friedman 2004). The importance of dopamine (DA) in obesity has been supported both by preclinical and clinical studies (Wang et al. 2001);(Meguid et al. 2000);(Hamdi et al. 1992). Evidence of DA s involvement in obesity, through its interactions with D2R, is given by the higher risk of weight gain and obesity observed in patients chronically treated with antipsychotic drugs (D2R antagonists) (Friedman 2004). Also PET brain imaging studies have shown reductions in D2R in striatum of obese individuals (Wang, et al. 2001). In the obese subjects but not in the controls, D2R were inversely related to the body mass index, suggesting an involvement of the DA system in modulating excessive food intake and weight gain. Several studies using PET have documented an age-related reduction of striatal D2R in humans (Volkow et al. 1996), primates (Morris, et al. 1999) and rats (Suzuki, et al. 2001). The objective of the present study was to a) examine if there was a link between striatal D2R and obesity using a rodent model of obesity and b) to assess the influence of age on striatal D2R in obese (Ob) and lean (Le) rats. **Methods:** 28 male Obese (fa/fa) and Lean Zucker rats were scanned with [¹¹C]raclopride at 1 and 4 months of age. **Results:** Using a multifactor ANOVA, we observed a significant main effect of D2R with respect to strain (p=0.017) as well as age (p<0.001). Factor wise multiple-comparison tests with respect to age and strain effects on D2R yielded the following significant differences: D2R were significantly different at 1 vs. 4 months for both Ob (p<0.001) & Le (p<0.001) rats. D2R differences were not found to be significant between Ob & Le rats at 1 month of age, while at 4 months D2R significantly differed between Ob & Le rats (p=0.044).

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