

ADOLESCENT CANNABINOID PRE-EXPOSURE EFFECTS ON COCAINE SELF ADMINISTRATION, FOOD REINFORCED BEHAVIOR AND CEREBRAL GLUCOSE METABOLISM IN ADULT RATS



A. Higuera-Matas¹, M.L. Soto-Montenegro², M. Miguéns¹, N. del Olmo¹, M. Biscaia¹, I. Torres¹, C. García-Lecumberri¹, J.J. Juan José², M.P. Viveros³, M. Desco² and E. Ambrosio¹

¹Departamento de Psicobiología, UNED, Madrid, Spain, ²Laboratorio de Imagen Médica, UMCE, Hospital General Gregorio Marañón, Madrid, Spain and ³Departamento de Fisiología Animal II, UCM, Madrid, Spain

E-mail: ahigueras@bec.uned.es

The use of cannabinoids in humans during adolescence is common; however, the long-term behavioural effects of adolescent cannabinoid exposure are poorly understood.

Therefore we have examined the effects of a chronic treatment with the cannabinoid receptor agonist CP 55,940 during an adolescent period on the acquisition of a food reinforced response and i.v. cocaine self-administration in adult male and female Wistar rats. CP (0.4 mg/kg, i.p.) or its corresponding vehicle was administered once daily beginning on postnatal day 28 and finishing on postnatal day 38. When animals reached their 100th postnatal day they were trained for cocaine self-administration (1 mg/kg per injection) acquisition under a fixed-ratio 1 (FR-1) schedule of reinforcement for 7 days in daily 30 min sessions.

The results showed that female rats that had received the CP treatment reached a significantly higher number of injections when compared to the other groups. In a parallel study, we analysed cerebral glucose metabolism in female CP- and vehicle-treated rats by using positron emission tomography. When [¹⁸F]-fluorodeoxyglucose (FDG) was injected, a PET scan was performed after 35 min of FDG uptake. Images were reconstructed using 3D-OSEM. Assessment of the quantification results is still in progress.

Additionally, a food-reinforced task experiment was carried out in the same animals (implanted with an i.v. catheter) that subsequently self-administered cocaine. This study was performed for 6 days in daily 30 min sessions. CP-treated female rats consistently reached a significantly higher responding rate compared to the other groups. These behavioural results suggest that cannabinoid pre-exposure during adolescence might facilitate cocaine self-administration as a part of a more general reorganization of the reward circuitry in adulthood induced by the cannabinoid exposure.

Supported by CAM GRISAL/0260/2004; FIS (RTA G03105); and PNSD 2004-2007 grants).