

Genetic background and glucocorticoid hormones contribute to individual differences in sensitivity to cocaine

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Individual differences in sensitivity to psychostimulant drugs are determined by both genetic background and environmental influences. Glucocorticoid hormones released from the adrenal glands during environmental challenges can influence vulnerability to drugs by acting on the midbrain dopamine system. The aim of this study was to investigate the role of genetic background in interaction with glucocorticoid hormones for the sensitivity of mice to cocaine. Genetic differences were examined by using two inbred mouse strains (C57BL/6 and DBA2) that display a natural difference in vulnerability to drugs. Our studies have revealed strain differences in the locomotor-enhancing effects of single and repeated cocaine administration and in the conditioned response to a drug-paired environment. Glucocorticoid levels were modulated in both mouse strains by surgical removal of the adrenal gland. It was shown that a reduction in glucocorticoid levels affects cocaine response in C57BL/6 and DBA2 mice. Taken together, these results indicate that both genetic background and glucocorticoid hormones can contribute to differences in sensitivity to psychostimulant drugs.

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I would like to present this paper as a poster in the neuroscience 1 session on Wednesday 2nd June.