Cocaine's rewarding value in apomorphine susceptible and unsusceptible rats

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Conditioned place preference (CPP) is a technique to measure an association between context and drug-induced reward sensation. Due to its relatively simple and non-invasive design, it is an easy technique to assess reward. If an animal experiences reward, the animal will, after several conditioning trials, have a preference for the previously drug-paired context. To test the rewarding value of cocaine in the genetically selected ratline of apomorphine susceptible (APO-SUS) and apomorphine unsusceptible (APO-UNSUS) animals, animals were subjected to the conditioned place preference paradigm.
The APO-SUS animals are, in comparison to their counterpart APO-UNSUS, characterized by a higher amount and density of dopaminergic D2 receptors in the striatum and a higher stress-induced dopaminergic activation of the nucleus accumbens as measured by in vivo microdialysis. In addition, the APO-SUS animals have a stronger and longer lasting increase in ACTH and corticosterone than the APO-UNSUS animals.
In short, the animals were tested for their initial locomotor response to a three-way partitioned box and possible side-preferences (preconditioning session). After 4 conditioning sessions, in which cocaine was always given on the less preferred side, animals were again given the free choice between the three compartments (test 1), followed by a secondary free choice test under the influence of cocaine. In total two doses of cocaine, namely 5 and 10 mg/kg and one control group (saline) were tested.
This experiment revealed that (1) APO-SUS animals have a higher novelty-induced activity score than APO-UNSUS animals, (2) cocaine given during conditioning sessions dose-dependently results in an increase in distance travelled, and (3) at a dose of 10 mg/kg place preference occurs in both test phase 1 and 2 for the APO-SUS animals, but not for the APO-UNSUS animals, indicating higher reinforcement properties of cocaine in the APO-SUS animals.

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