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Presentation Abstract

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Presentation Title: Nucleus accumbens C-Fos expression is correlated with conditioned place preference to cocaine, morphine and high fat/sugar food consumption

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Abstract: Obesity is a rapidly expanding epidemic that has serious health consequences and is the leading cause of preventable death in the United States. Psychostimulant and opioid addiction is a separate serious societal issue stemming from an individual's inability to control reward-seeking behavior. Cravings for drugs of abuse as well as highly palatable foods can be triggered simply by exposure to a reward-paired environment. Stimulation of the nucleus accumbens by addictive substances, including high fat/sugar foods triggers expression of immediate early genes, the measurement of which can be used as an indicator of cellular activation. The current study employed an 8-day biased CPP paradigm to compare the rewarding properties of a high fat/sugar food (Oreo cookies) that is highly palatable to humans and rats to the rewarding properties of cocaine and morphine. Reward behavior was correlated with immunohistochemical measurement of nucleus accumbens c-Fos expression. Results indicate that the reward behavior associated with consuming Oreos is equivalent to conditioned place preference to cocaine or morphine. The magnitude of conditioned place preference to all three substances was positively correlated with nucleus accumbens c-Fos expression. These findings suggest that high fat/sugar foods and drugs of abuse trigger brain addictive processes to the same degree and lend support to the hypothesis that maladaptive eating behaviors contributing to obesity can be compared to drug addiction.

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CONDITIONED PLACE PREFERENCE

FOOD