

Just expecting a tasty food activates brain reward systems

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Research to be presented at the Annual Meeting of the Society for the Study of Ingestive Behavior (SSIB), the foremost society for research into all aspects of eating and drinking behavior, shows that exposing rats to a context associated with eating chocolate activates a part of the brain's reward system known as the orexin system. This finding helps explain why eating can be triggered by environmental cues even in the absence of hunger. The results have implications for the development of new drug treatments for overeating.

The rate of obesity continues to rise within the United States and abroad, and overconsumption of tasty food is an obvious culprit. Little is known regarding how palatable foods affect the brain, but it seems that especially tasty foods elicit brain responses similar to those elicited by drugs of abuse such as cocaine and [nicotine](#), pointing to a general involvement of the brain's "reward" system. A common factor may be activation of orexin neurons in the brain, which are recruited during of rewards such as a tasty food or a dose of cocaine.

"Our research program is focused on identifying brain systems that are activated by palatable food intake. The hypothalamic orexin system is known to promote wakefulness and arousal; however, it is now clear that this system also participates in the regulation of reward-related behaviors, including overconsumption of palatable foods," says Derrick Choi, lead author. Because reward anticipation is a contributing factor to relapse to [drug use](#), Choi hypothesizes that orexin is an ideal candidate system that may underlie the rewarding aspects of eating highly palatable

foods, which clearly can lead to obesity.

In their current study, the researchers trained rats to expect a piece of Hershey's milk chocolate in a unique environment. After training, rats were placed into the same environment, where no chocolate was present. The researchers found that the expectation of chocolate alone activated brain orexin systems. The results could explain why individuals tend to overeat in contexts associated with prior experiences of eating good food. "It entirely possible that future treatments for obesity will involve a combination of lifestyle changes as well as pharmacological therapies aimed at orexin and other [brain](#) systems, to regulate food reward-related behaviors," said Choi.

Source: Society for the Study of Ingestive Behavior

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