

Your brain absolutely cannot resist doughnuts – here's why



Your brain is getting very
excited right now

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By Alison George

Doughnuts are particularly difficult to resist – and now we know why. A study of how our brains respond to food has found that treats that are high in both [carbs and fats](#) trigger a super-charged amount of activity in our brain's reward centre.

Dana Small at Yale University and colleagues scanned the brain activity of hungry volunteers as they were shown images of foods that were either [high in carbohydrate](#), such as candy, high in fat, such as cheese, or high in both, such as doughnuts. After the scans, the volunteers were asked to bid money in a competitive auction for the food they wanted to have for a snack.

Compared to food containing just carbs or fat, the team found that foods high in both of these together provoked far more activity in the brain's striatum – a region involved in reward that releases the feel-good chemical dopamine.

The volunteers were also willing to pay more for the snacks that were high in both carbs and fat, despite all the food items having the same calorific value.

Double-whammy

Small thinks we may have separate systems in the brain to evaluate fatty or carb-heavy foods. If both get activated at the same time, this tricks the brain to produce a larger amount of dopamine – and a bigger feeling of reward – than there should be based on the food's energy content.

This could be because when the human brain evolved, our hunter-gatherer ancestors ate a diet consisting mainly of plants and meat, and never encountered food that is high in both carbs and fat. “The brain is used to seeing one signal at a time. Modern food is tricking the system,” says Small.

The finding fits with studies on rodents which found they can regulate their calorie intake when given food containing only fat or carbohydrate, but overeat and gain weight when given access to foods containing both.

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