

Study: Orange juice component may help combat obesity

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The equivalent of just two and a half glasses of orange juice a day could reverse obesity and reduce the risk of heart disease and diabetes—a benefit Western researchers attribute to nobiletin, a molecule found in sweet oranges and tangerines.

The Schulich School of Medicine & Dentistry-led study showed [mice](#) fed a high-fat, high-cholesterol diet that were also given nobiletin were noticeably leaner and had reduced levels of insulin resistance and [blood fats](#) compared to mice that were fed a high-fat, [high-cholesterol diet](#) alone.

The study, "The citrus flavonoid nobiletin confers protection from metabolic dysregulation in high-fat-fed mice independent of AMPK," was recently published in the *Journal of Lipid Research*.

"We went on to show that we can also intervene with nobiletin," said Schulich professor Murray Huff, who has been studying nobiletin's effects for more than a decade. "We've shown that in mice that already have all the negative symptoms of obesity, we can use nobiletin to reverse those symptoms, and even start to regress plaque build-up in the arteries, known as atherosclerosis."

But Huff says he and his team at Robarts Research Institute still haven't been able to pinpoint exactly how nobiletin works.

Researchers hypothesized the molecule was likely acting on the pathway that regulates how fat is handled in the body. Called AMP Kinase, this regulator 'turns on' the machinery in the body that burns fats to create energy, and it also blocks the manufacture of fats.

However, when the researchers studied nobiletin's effects on mice genetically modified to remove AMP Kinase, the effects were the same.

"This result told us that nobiletin is not acting on AMP Kinase and is bypassing this major regulator of how fat is used in the body," Huff said. "What it still leaves us with is the question—how is nobiletin doing this?"

Huff says while the mystery remains, this recent result is still clinically important because it shows that nobiletin won't interfere with other drugs that act on the AMP Kinase system. He says current therapeutics for diabetes like metformin for example, work through this pathway.

The next step is to move these studies into humans to determine if nobiletin has the same positive metabolic effects in human trials.

"Obesity and its resulting metabolic syndromes are a huge burden to our health care system, and we have very few interventions that have been shown to work effectively," Huff said. "We need to continue this emphasis on the discovery of new therapeutics."

More information: Nadya M. Morrow et al. The citrus flavonoid nobiletin confers protection from metabolic dysregulation in high-fat-fed mice independent of AMPK, *Journal of Lipid Research* (2020). [DOI: 10.1194/jlr.RA119000542](https://doi.org/10.1194/jlr.RA119000542)

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