

Study shows whole-fruit vitamin C boosts feelings of vitality

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A University of Otago study has shown adults low in dietary vitamin C can improve their feelings of vitality by eating two kiwifruit a day for two weeks.

The study highlights the advantages of ingesting vitamin C through whole fruits such as kiwifruit. Observed effects were more marked than in a matched population taking vitamin C predominantly through a supplement [tablet](#).

Researchers from Otago's Department of Psychology (Dunedin) and the Center for Free Radical Research in Christchurch ran a placebo-controlled intervention to test whether increasing vitamin C through whole fruit or tablets can improve feelings of vitality or zest for life.

They recruited 167 participants between 18 to 35 years-old who had low baseline levels of vitamin C and randomly divided them into three groups; a kiwifruit group, an equivalent vitamin C tablet group (250 mg), or a placebo-tablet group. Each day for four weeks, participants were asked to eat two Sungold kiwifruit (a fruit known to be exceptionally high in vitamin C) or consume their tablet. Blood

vitamin C levels and questionnaire measures of mood, fatigue, and well-being were measured fortnightly throughout the study.

Results showed vitamin C levels in both the kiwifruit group and vitamin C tablet group increased to normal within two weeks. There was no placebo effect. A key finding however was the extra benefits to vitality reported by the group taking kiwifruit.

"Whole fruit had a broader range of benefits; lessening fatigue and improving mood and well-being across a wider number of people than we saw in the supplement group. The vitamin C tablet did decrease fatigue and improve well-being to some extent for individuals with consistently low vitamin C levels leading up to the intervention. Interestingly, the benefits from consuming kiwifruit emerged in just 2 weeks," lead author Associate Professor Tamlin Conner says.

Vitamin C has many functions in the body and brain, and increases the production of numerous hormones and neurotransmitters. These include adrenalin, serotonin, and oxytocin that control stress levels, regulate mood, and promote feelings of well-being. Co-investigator Professor Margreet Vissers says while links between vitamin C and physical functioning are well-documented, this study establishes a role for vitamin C in mental functioning. The study also suggests that whole fruit intake promotes added benefits to mental function.

Dr. Conner says by raising vitamin C levels through whole foods like kiwifruit, people can get other [active ingredients](#) that will benefit more systems in the body and brain.

"For example, kiwifruit has numerous additional vitamins and minerals that support health and are also high in dietary fiber, which is beneficial to the gut. There are important links between the gut and the regulation of mood. This could account for why

[kiwifruit](#) benefited mood more than [vitamin C](#) tablets."

The study, "KiwiC for Vitality: Results of a Randomized Placebo-Controlled Trial Testing the Effects of Kiwifruit or Vitamin C Tablets on Vitality in Adults with Low Vitamin C Levels," has been published in the open access journal *Nutrients*.

More information: Tamlin S. Conner et al. KiwiC for Vitality: Results of a Randomized Placebo-Controlled Trial Testing the Effects of Kiwifruit or Vitamin C Tablets on Vitality in Adults with Low Vitamin C Levels, *Nutrients* (2020). [DOI: 10.3390/nu12092898](#)

Provided by University of Otago

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