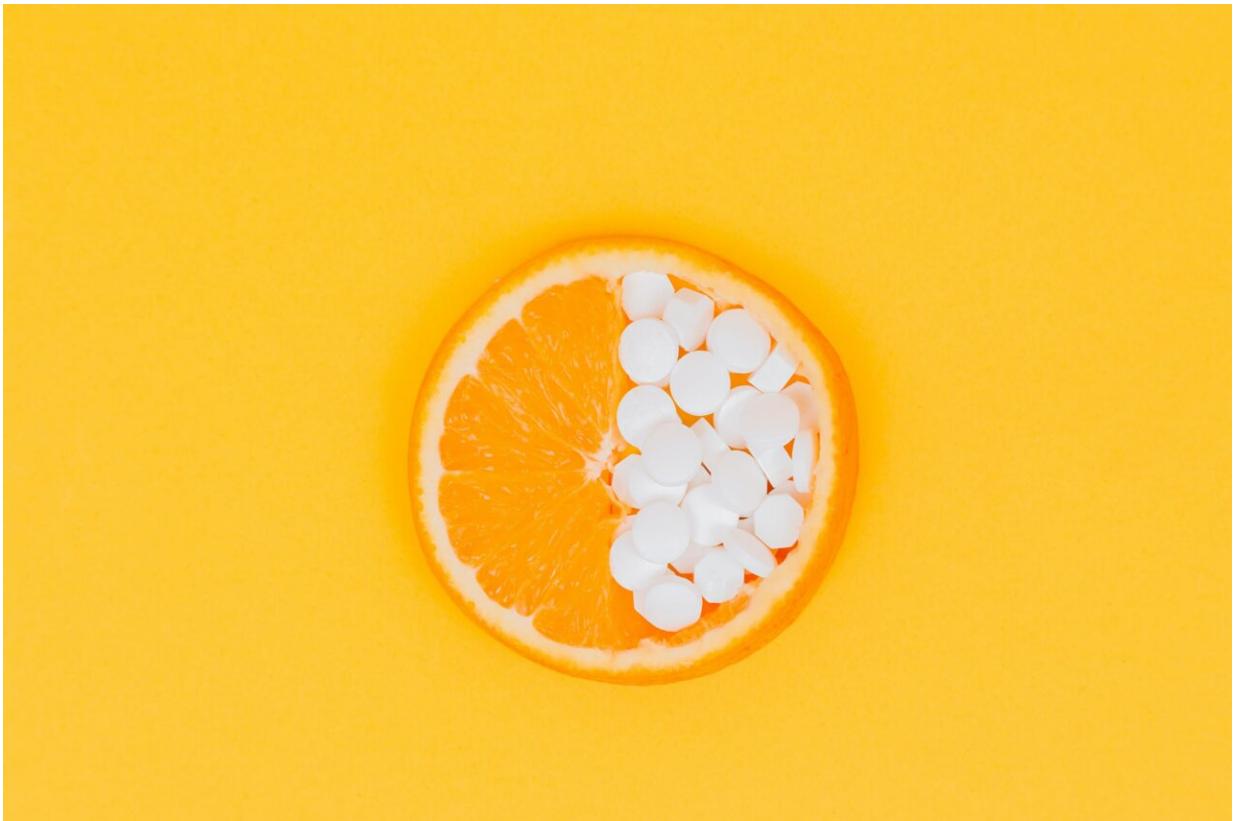


# Study identifies exact amounts of extra vitamin C for optimal immune health

May 4 2022

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Credit: Unsplash/CC0 Public Domain

If you are carrying a few extra kilos in weight, an extra apple or two per day might make a difference in boosting your immune system and helping ward off COVID-19 and winter illnesses.

New University of Otago, Christchurch research has identified, for the first time, exactly how much extra vitamin C humans need to ingest, relative to their body weight, to maximize their immune health.

The study, co-authored by Associate Professor Anitra Carr from the University's Department of Pathology and Biomedical Science, has found that for every 10 kilograms of excess weight a person carries, their body needs an extra 10 milligrams of Vitamin C daily, which will help to optimize their immune health.

"Previous studies have already linked higher body weight with lower vitamin C levels," says lead author Associate Professor Carr. "But this is the first study to estimate how much extra daily vitamin C is actually needed for people, relative to their body weight, to help maximize their health."

Published in the international journal *Nutrients*, and co-authored with two researchers from the U.S. and Denmark, the study combined results from two earlier major international studies.

Associate Professor Carr says its novel findings have important implications for public health internationally—particularly in light of the current COVID-19 pandemic—as vitamin C is an important immune-support nutrient and vital in helping the body protect itself from severe viral illnesses.

Although no studies have been carried out as yet specific to [dietary intake](#) for COVID-19, Associate Professor Carr suggests these findings could potentially help heavier people better protect themselves from such illnesses.

"We know obesity is a risk factor for getting COVID-19 and that obese patients are more likely to struggle to fight it off once infected. We also

know that vitamin C is essential for good immune function and works by helping white blood cells fight infection. The results from this study therefore suggest that increasing your vitamin C intake if overweight might be a sensible response.

"Pneumonia is a major complication of COVID-19 and patients with pneumonia are known to be low in vitamin C. International research shows that vitamin C decreases the likelihood of people getting pneumonia and decreases the severity of it, so finding the right levels of vitamin C to take if you are overweight may help to better support your [immune system](#)," says Associate Professor Carr.

The study determined how much vitamin C is required for people of higher [body weight](#) compared to a starting base weight of a 60 kilogram person consuming the average New Zealand dietary vitamin C intake of 110 milligrams per day, which most people achieve from a balanced diet. In other words, someone weighing 90 kilograms would need to take an extra 30 milligrams of vitamin C to achieve the optimal goal of 140mg/day; while someone weighing 120 kilograms would need at least an extra 40 milligrams of vitamin C daily to achieve the optimal 150mg/day.

Associate Professor Carr says the easiest way to increase daily vitamin C intake is by upping the consumption of vitamin C-rich foods such as fruits and vegetables or by taking a vitamin C supplement.

"The old saying of 'an apple a day keeps the doctor away' is actually useful advice here. An average-sized apple contains 10 milligrams of vitamin C, so if you weigh 70 to 80 kilograms, achieving the optimal amount of vitamin C your body needs could be as easy as eating an extra apple or two to give your body the extra 10 to 20 milligrams of daily vitamin C it needs. If you weigh more than this, then perhaps an orange, which contains 70 milligrams of vitamin C, or a kiwifruit with 100

milligrams, may be the easiest solution."

However, she says for those who dislike eating fruit, have restricted diets such as people with diabetes, or struggle to access fresh fruit and vegetables due to financial barriers, taking a vitamin C supplement is a great alternative.

"There are a large variety of vitamin C supplements available over-the-counter, most are relatively cheap, safe to use and easily accessible from a local supermarket, pharmacy or online.

My advice for those who choose to get their vitamin C from a multivitamin, is to check the exact amounts of vitamin C per tablet, as some multivitamin formulations may only contain it in very low doses," says Associate Professor Carr.

**More information:** Anitra C. Carr et al, Estimation of Vitamin C Intake Requirements Based on Body Weight: Implications for Obesity, *Nutrients* (2022). [DOI: 10.3390/nu14071460](https://doi.org/10.3390/nu14071460)

Provided by University of Otago

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