

Beetroot juice supplement found to lower blood pressure, improve exercise capacity in people with COPD

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A 12-week course of daily beetroot juice supplement for people with chronic obstructive pulmonary disease (COPD) lowered blood pressure

and improved how far patients could walk in six minutes in research published in the *European Respiratory Journal*.

COPD is a serious lung condition affecting around 400 million people worldwide. COPD which includes [chronic bronchitis](#) and emphysema, causes breathing difficulties and severely limits people's capacity for physical activity. It also increases the risk of heart attacks and strokes.

The new research tested a concentrated beetroot juice supplement that is high in [nitrate](#) against a beetroot juice placebo that looked and tasted the same but had the nitrate removed.

The study was carried out by researchers at Imperial College London, UK, led by Professor Nicholas Hopkinson. He said, "There is some evidence that beetroot juice as a source of nitrate supplementation could be used by athletes to improve their performance, as well as a few short-term studies looking at blood pressure. Higher levels of nitrate in the blood can increase the availability of nitric oxide, a chemical that helps [blood vessels](#) relax. It also increases the efficiency of muscles, meaning they need less oxygen to do the same work."

The new study included 81 people with COPD who were being treated at the Royal Brompton Hospital, London, UK, and whose [systolic blood pressure](#) measured higher than 130 millimeters of mercury (mmHg). Systolic blood pressure is the highest level the blood pressure reaches when one's heart beats, and the ideal range is between 90 and 120mmHg. As well as monitoring patients' blood pressure, researchers tested how far patients could walk in six minutes at the beginning and end of the study.

Participants were randomly allocated to either receive the 12-month course of nitrate-rich beetroot supplement (70 milliliters of concentrated beetroot juice containing 400 milligrams of nitrate once a day) or the

placebo.

Researchers found that those taking the nitrate-rich supplement experienced an average reduction in systolic blood pressure of 4.5mm/Hg compared to those taking the placebo. There was also an average increase of around 30 meters in how far patients could walk in six minutes for those taking the nitrate-rich beetroot juice.

Professor Hopkinson said, "At the end of the study, we found that the blood pressure of people taking the nitrate-rich beetroot juice drink was lower and their blood vessels became less stiff. The juice also increased how far people with COPD could walk in six minutes compared to placebo. This is one of the longest-duration studies in this area so far. The results are very promising, but will need to be confirmed in larger, longer-term studies."

Professor Apostolos Bossios from the Karolinska Institutet and Karolinska University Hospital, Stockholm, Sweden, is Head of the European Respiratory Society's airway disease assembly and was not involved in the research. He said, "COPD cannot be cured, so there is a pressing need to help patients live as well as they can with the condition and to reduce their risk of cardiovascular disease.

"Patients taking part in this trial generally found the [beetroot](#) juice supplement acceptable and they saw benefits in terms of their [blood pressure](#) and mobility. This suggests they may see improvements in everyday life and should have a lower risk of heart disease and stroke, but we will have to study patients for longer to confirm if this is the case.

"Beetroot juice has been consumed widely and tested in other research, so it has the potential to be a safe treatment for people with COPD."

More information: Oral nitrate supplementation improves

cardiovascular risk markers in COPD: ON-BC a randomised controlled trial, *European Respiratory Journal* (2023). [DOI: 10.1183/13993003.02353-2022](#)

Provided by European Respiratory Society

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