

# Research reveals new secret weapon for Le Tour

July 1 2011

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Winning margins in the Tour de France can be tight – last year just 39 seconds separated the top two riders after more than 90 hours in the saddle. When every second counts, riders do everything possible to gain a competitive advantage – from using aerodynamic carbon fibre bikes to the very latest in sports nutrition.

Now there could be a new, completely legal and rather surprising weapon in the armoury for riders aiming to shave vital seconds off their time – beetroot juice.

Research by the University of Exeter, published in the journal *Medicine and Science in Sports and Exercise*, has shown drinking the juice enables competitive-level cyclists to cut down the time it takes to ride a given distance. This is the first study which has shown that beetroot juice can be effective in a simulated competition environment.

For the study, nine club-level competitive male cyclists were asked to compete in time trials over 4km (2.5 mile) and 16.1km (10 mile). All the riders were asked to do each time trial twice. Each time they drank half a litre of beetroot juice beforehand. On one occasion they had normal beetroot juice, on the other occasion – unbeknown to the triallists – the beetroot juice had a key ingredient, nitrate, removed.

The researchers monitored athletes' VO<sub>2</sub> levels (showing the amount of oxygen consumed) during exercise to ensure that the cyclists worked at maximum effort on each occasion.

Results showed that when the cyclists drank ordinary beetroot juice they had a higher power output (measured in watts) for the same level of effort – suggesting their muscles and cardio-vascular system were being more efficient.

On average, riders were 11 seconds (2.8%) quicker over the 4km distance and 45 seconds (2.7%) faster over the 16.1km distance.

Professor Andrew Jones, from the University of Exeter, lead author on the research, said: "This is the first time we've studied the effects of beetroot juice, and the high nitrate levels found in it, on simulated competition.

"The findings show an improvement in performance that, at competition level, could make a real difference – particularly in an event like the [Tour de France](#) where winning margins can be tight."

Beetroot juice is a natural source of nitrate, which is thought to be the active ingredient in affecting athlete's performance.

The nitrate has two physiological effects. Firstly, it widens blood vessels, reducing blood pressure and allowing more blood flow. Secondly, it affects muscle tissue, reducing the amount of oxygen needed by muscles during activity. The combined effects have a significant impact on performing physical tasks, whether it involves low-intensity or high-intensity effort.

Previous studies by the University of Exeter uncovered the impacts of [beetroot juice](#) and have begun to look in detail at its effects on different kinds of physical activity.

**More information:** The beetroot juice used in this research was provided by James White Drinks ([www.jameswhite.co.uk](http://www.jameswhite.co.uk))

Provided by University of Exeter

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