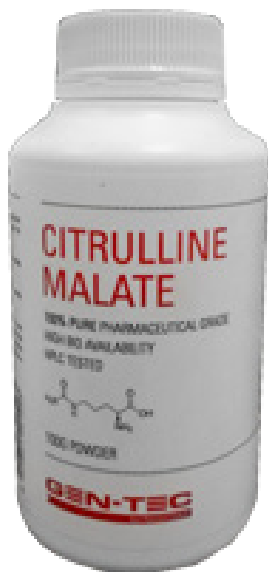


PRODUCT INFORMATION



CITRULLINE MALATE

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Citrulline malate (CM) is an amino acid that is derived from the metabolism of arginine and glutamine. Arginine's effects on the body are well documented and the industry has embraced this amino acid for its effects on nitric oxide (NO) production and vasodilation. However, many overlook the significance of CM and the role it has beyond nitric oxide production.

Unlike arginine which has to pass through the liver where it is metabolised into various active compounds leaving less arginine to be converted directly into nitric oxide, CM by-passes hepatic metabolism (liver) resulting in around 80% of ingested CM reaching the kidneys where it can be converted directly into arginine and nitric oxide. Therefore, CM is more effective at increasing endogenous arginine levels than arginine itself. Put simply, this means that CM gives arginine a greater push to be converted into NO which in turn significantly increases vasodilation and circulation.

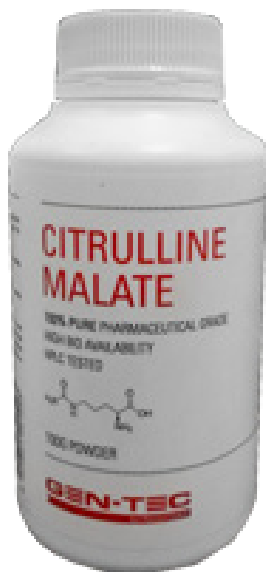
A small randomised controlled trial (RCT) published in the Journal of Strength and Conditioning Research, examined the effects of using eight grams of CM compared to a placebo dose during a weight training session involving a chest workout of 16 sets at 80% of 1RM (1). The results demonstrated that the group taking CM performed more repetitions to muscular failure by the fourth set of each exercise compared to the placebo group. There was also a 40% reduction in muscle soreness 24 and 48 hours post exercise in the treatment group com-

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pared to the placebo group. Similar results have been replicated in other RCT where CM has improved either recovery from repeated anaerobic bouts or enhanced performance by promoting aerobic energy production and muscle oxygenation (2-6).

CM can also be used therapeutically to detoxify the body as CM is very effective at eliminating toxic compounds within the intestinal system which is believed to lead to fatigue and lethargy. Citrulline malate has also been demonstrated to stimulate the release of human growth hormone at rest compared to placebo, however the significance of this is not known to date.

In summary, the effects of citrulline malate supplementation can;

- o Reduce muscle fatigue 24-48 hours past exercise by facilitating the clearance of ammonia and exercise related acidosis (caused by lactic acid accumulation).
- o Contribute to aerobic energy production and muscle oxygenation.
- o Increase vasodilation and blood flow to the working muscles.
- o Stimulate the release of human growth hormone.

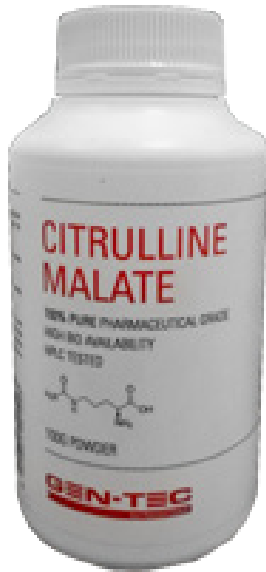
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