

Medizinische Referenzen zu den Inhaltsstoffen von Androsil®

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Vitamin C

An increase in blood flow is seen in instances of impaired blood flow (smoking, obesity, etc.) which may be due to preservation of nitric oxide function (via reducing oxidation thereof); this is a phenomena general to antioxidants and not unique to Vitamin C.

Blood flow

Scientific consensus: 100%

Study: Ascorbic Acid Prevents Vascular Dysfunction Induced By Oral Glucose Load In Healthy Subjects. Link: <http://www.ncbi.nlm.nih.gov/pubmed/22153532>

Vitamin C, through its anti-oxidant potential, was able to reduce endothelial dysfunction in the forearm after a glucose load of 75g. Forearm resistance to blood flow was reduced relative to placebo.

Study: Ascorbate Improves Circulation In Postural Tachycardia Syndrome. Link: <http://www.ncbi.nlm.nih.gov/pubmed/21622825>

In persons with postural tachycardia syndrome, vitamin C was able to increase blood flow and microcirculation acutely secondary to its anti-oxidant abilities.

Study: Vitamin C Restores Blood Pressure And Vasodilator Response During Mental Stress In Obese Children. Link: <http://www.ncbi.nlm.nih.gov/pubmed/21552645>

In obese children who are subject to higher average blood pressure and blood pressure during mental stress, vitamin C at 500mg was able to reduce the anticipated spike in blood pressure to levels near control.

Study: Oral Administration Of Ascorbic Acid Attenuates Endothelial Dysfunction After Short-term Cigarette Smoking. Link: <http://www.ncbi.nlm.nih.gov/pubmed/14743545>

2g of vitamin C taken prior to smoking was able to attenuate blood flow alterations in the forearm when preloaded to the cigarette.

L-Citrulline

L-Citrulline is an amino acid. It is turned into L-arginine in the kidneys after supplementation, which means L-citrulline supplementation is a more effective method of increasing L-arginine levels in the body than L-arginine supplementation.

Blood flow

An increase in blood flow is noted with citrulline supplementation in persons with impaired blood flow.

Scientific consensus: 100%

Short-term effects of L-citrulline supplementation on arterial stiffness in middle-aged men

Link: <http://www.ncbi.nlm.nih.gov/pubmed/21067832>

Change of Effect: Increase (Statistically Significant, p-value < 0.05)

Trial Design: Double Blind

Trial Length: 1-7 Days

Number of Subjects: 15

Gender: Male

Ages: 45-64

Body-Types: Overweight

Notes for this Study:

5,600mg of citrulline daily for 7 days in otherwise healthy middle aged men was able to improve blood flow secondary to nitric oxide, but did not influence blood pressure per se. The improvement in blood flow was correlated with the serum increases in arginine.

Erections

Hardness of erections in persons with mild erectile dysfunction appears to be increased following supplementation of citrulline supplementation.

Scientific consensus: 100%

Oral L-citrulline supplementation improves erection hardness in men with mild erectile dysfunction

Link: <http://www.ncbi.nlm.nih.gov/pubmed/21195829>

Change of Effect: Increase (Statistically Significant, p-value < 0.05)

Trial Design: Cohort or Case-Control Study

Trial Length: 1-6 months

Number of Subjects: 24

Gender: Male

Ages: 18-29, 30-44

Body-Types: Average

Notes for this Study:

1,500mg citrulline daily (two daily doses of 750mg) for 6 weeks was able to increase erectile hardness in men suffering from erectile dysfunction, with a 50% improvement seen with citrulline treatment but only 8.3% seen in placebo. Study was single-blind by design.

Nitric oxide

Nitric oxide derivatives (nitrate and urinary cGMP, since nitric oxide itself is hard to measure these biomarkers are indicative of nitric oxide production) appear to be reliably increased following oral consumption of citrulline supplementation.

L-citrulline-malate influence over branched chain amino acid utilization during exercise

Link: <http://www.ncbi.nlm.nih.gov/pubmed/20499249>

Change of Effect: Increase (Statistically Significant, p-value < 0.05)

Trial Design: Double Blind

Trial Length: 24 hours

Number of Subjects: 17

Gender: Male

Ages: 18-29

Body-Types: Trained, Average

Notes for this Study:

Supplementation of 6g citrulline prior to a prolonged exercise test was associated with an increase in urea (27.1-30.4%) and nitrite (indicative of nitric oxide) and appeared to attenuate the rise in urate. Growth hormone increased 66.8% after exercise.

Short-term effects of L-citrulline supplementation on arterial stiffness in middle-aged men

Link: <http://www.ncbi.nlm.nih.gov/pubmed/21067832>

Change of Effect: Increase (Statistically Significant, p-value < 0.05)

Trial Design: Double Blind

Trial Length: 1-7 Days

Number of Subjects: 15

Gender: Male

Ages: 45-64

Body-Types: Overweight

Notes for this Study:

5,600mg of citrulline daily for 7 days in otherwise healthy middle aged men was able to improve blood flow secondary to nitric oxide, but did not influence blood pressure per se. The improvement in blood flow was correlated with the serum increases in arginine.

L-Arginine

May increase blood flow secondary to activating nitric oxide.

Blood flow

Study:

Restoring Vascular Nitric Oxide Formation By L-arginine Improves The Symptoms Of Intermittent Claudication In Patients With Peripheral Arterial Occlusive Disease.

Link:

<http://www.ncbi.nlm.nih.gov/pubmed/9809945>

Change of Effect:

Increase (Statistically Significant, p-value < 0.05)

Notes for this Study:

Supplementation of 8g of arginine twice daily (16g total) for 6 weeks in persons with intermittent claudication appears to promote blood flow and reduce symptoms associated with increased biomarkers of nitric oxide metabolite (nitrate and urinary cGMP). Functional testing noted that arginine outperformed 80mcg PGE1 in improving walking distance and pain-free walking distance, and improved VAS scores for symptoms.

Study:

Pharmacokinetic And Pharmacodynamic Properties Of Oral L-citrulline And L-arginine: Impact On Nitric Oxide Metabolism

Notes for this Study:

Supplemental L-arginine (3g twice a day) was able to increase nitric oxide metabolites without significantly affecting blood flow. ADMA was not increased (the arginine: ADMA ratio actually increased).

Link:

<http://www.ncbi.nlm.nih.gov/pubmed/17662090>

Nitric Oxide

Has been implicated in increasing nitric oxide formation in the body.

Study:

Acute L-arginine supplementation reduces the O₂ cost of moderate-intensity exercise and enhances high-intensity exercise tolerance.

Change of Effect:

Increase

Link:

<http://jap.physiology.org/content/early/2010/08/19/jappphysiol.00503.2010.abstract>

Study:

Beneficial Effects Of A Long-term Oral L-arginine Treatment Added To A Hypocaloric Diet And Exercise Training Program In Obese, Insulin-resistant Type 2 Diabetic Patients

Change of Effect:

Increase (Statistically Significant, p-value < 0.05)

Notes for this Study:

21 days of supplementation with L-arginine in persons with type II diabetes, in conjunction with a hypocaloric diet and exercise routine (also given to the placebo group), noted that supplementation was associated with more improvements in the adipokine, oxidative, and nitric oxide profiles of the body resulting in enhanced endothelial health. An increase was noted in superoxide dismutase.

Link:

<http://www.ncbi.nlm.nih.gov/pubmed/16772327>

Study:

Randomized, Double-Blind, Placebo-Controlled Study of Supplemental Oral L-Arginine in Patients With Heart Failure.

Clinical Assessments:

Supplemental oral L-arginine improved patients' functional status. There was a significant improvement, from 55 ± 28 to 42 ± 26 ($P<.05$), in the Living With Heart Failure questionnaire score (Fig 1 \Downarrow) and a significant increase, from 390 ± 91 to 422 ± 86 m ($P<.05$), in the distance walked in 6 minutes (Fig 2 \Downarrow). Body weight remained stable (87.7 ± 11.4 versus 87.2 ± 11.4 kg) throughout the 12-week study period. Mean supine blood pressure decreased slightly, from 82 ± 9 to 80 ± 6 mm Hg ($P<.05$), during L-arginine administration. Supine resting heart rate did not change (81 ± 16 versus 81 ± 13 bpm).

During forearm exercise, forearm blood flow increased significantly after the L-arginine treatment period compared with the placebo period (Fig 3 \Downarrow). The average improvement in forearm blood flow during exercise was 1.5 ± 3.0 mL \cdot min $^{-1}\cdot$ dL $^{-1}$ ($P<.05$). Maximum voluntary hand contraction did not change (35 ± 9 versus 36 ± 10 kg). In contrast to exercise hyperemia, reactive hyperemia after 5 minutes of arterial occlusion was not significantly augmented (Fig 4 \Downarrow).

Biochemical Assessments:

There was a significant increase in mean plasma L-arginine concentration, from 85 ± 21 to 98 ± 28 μ mol/L ($P<.05$), during administration of supplemental oral L-arginine. Small increases in blood urea nitrogen were seen, which may be related to L-arginine metabolism in the urea cycle. There were no differences in serum electrolytes.

Figures:

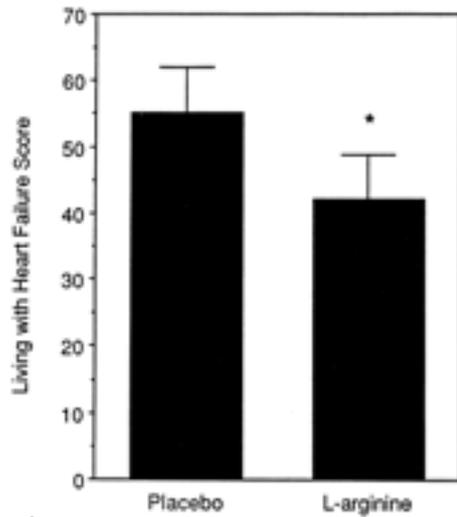


Fig. 1

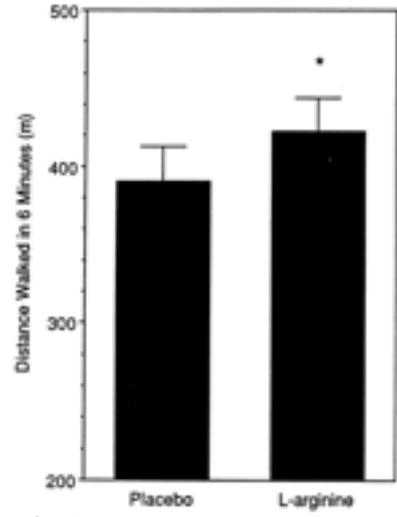


Fig. 2

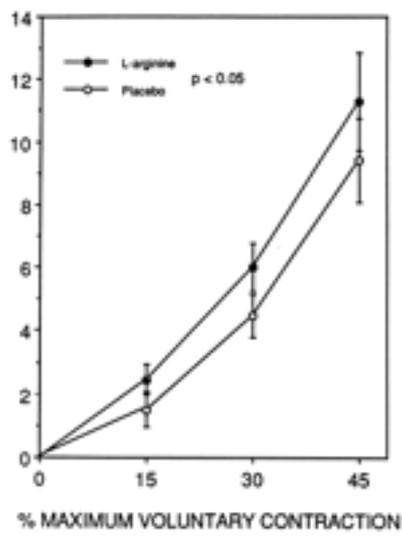


Fig. 3

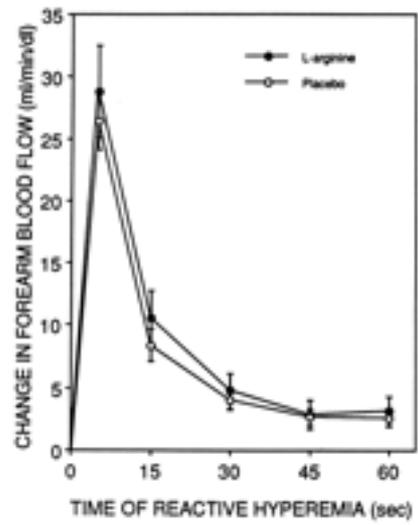


Fig.4

Link:

<http://circ.ahajournals.org/content/93/12/2135.full>