METHODS: Fifteen MA females (50 ± 8 years) completed two randomized, double blind trials consuming CM (8 g dextrose + 8 g CM) and a placebo (8 g dextrose). Sixty minutes after consumption, participants performed 5 repetition (muscular strength) and 50 repetition (muscular endurance) ISO protocols. For each protocol, relative peak torque, work completed, fatigue index, average power, and average peak torque were evaluated.
RESULTS: During 5 repetition ISO extension, subjects completed significantly more total work (p = .03) when consuming CM compared to placebo (762.0 ± 213.9 and 714.5 ± 162.3, respectively); however, no significant differences were observed for relative peak torque (p = .35), fatigue index (p = .71), average power (p = .09), or average peak torque (p = .13). When examining flexion during the 5 repetition ISO, no significant differences were observed between supplement trials. For extension of the 50 repetition ISO, total work completed (p = .02; 3717.0 ± 957.2 and 3472.7 ± 813.8), relative peak torque (p < .01; 129.6 ± 20.2 and 122.9 ± 17.9), average power (p = .02; 101.9 ± 23.3 and 95.5 ± 20.4), and average peak torque (p = .02; 53.9 ± 9.9 and 52.5 ± 9.6) were significantly greater when consuming CM compared to placebo, respectively. During 50 repetition ISO flexion, significant increases existed for total work completed (p = .04; 1605.4 ± 557.7 and 1369.6 ± 639.8), average power (p = .02; 43.2 ± 14.8 and 38.8 ± 15.9) and average peak torque (p = .03; 28.0 ± 7.3 and 25.7 ± 8.6) when consuming CM compared to placebo, respectively.
CONCLUSIONS: CM supplementation appears to increase performance during lower-body ISO in female MA tennis players. These data indicate MA may improve performance via CM supplementation.

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Effects Of D-aspartate And ZMA Supplementation On Serum Hormones In Rats

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(No relationships reported)

PURPOSE: Both D-aspartate (DAA) and a commercial supplement containing zinc magnesium aspartate (ZMA) have been proposed to enhance anabolic hormonal profiles and reduce catabolism in human by two distinct mechanisms. However, whether the combination of DAA and ZMA has an additive effect on the release of the anabolic hormones is not known.
METHODS: Four groups of 10 rats each drank a solution containing 104 mg DAA (DASP), 77 mg ZMA, 104 mg DAA and 77 mg ZMA (MIX) or a placebo (PLA) for 28 days. Blood samples were collected from carotid arteries and analyzed for serum DAA, total testosterone (TT), free testosterone (FT), luteinizing hormone (LH), estradiol (ES), GnRH, D-aspartate oxidase (DDO), IGF-1, growth hormone (GH) and cortisol. DAA accumulation was determined in the pituitary, the pineal, the adrenal, the thyroid, and the testis. Data were analyzed using independent-samples t tests.
RESULTS:DASP significantly increased the serum concentrations of TT (20.34±4.10 vs. 10.41±1.85 ng/ml, p=0.042) and GH (19.83±1.69 vs. 15.05±1.20 ng/ml, p=0.039) compared with PLA. Serum FT was increased in DASP but not significant (788.56±43.88 vs. 673.93±125.99 pg/ml, p=0.070). Compared with DASP, MIX significantly decreased serum FT (613.80±31.10 vs. 788.56±43.88 pg/ml, p=0.005), GH (13.68±1.10 vs. 19.83±1.69 ng/ml, p=0.007) and IGF-1 (180.94±16.50 vs. 246.01±19.96 ng/ml, p=0.023), with a trend to decrease serum TT (11.79±1.24 vs. 20.34±4.10 ng/ml, p=0.076), although ZMA alone did not have any apparent effects on them. DAA accumulation was not changed in all groups except that testicular DAA was increased in DASP (0.036±0.002 vs. 0.027±0.001 nmol/g tissue, p=0.001), and MIX further increased it (0.053±0.004 vs. 0.027±0.001 nmol/g tissue, p<0.001), compared with PLA. ZMA significantly decreased serum LH (8.64±0.56 vs. 11.18±1.10 ng/ml, p=0.047) and MIX further suppressed it (7.97±0.93 vs. 11.18±1.10 ng/ml, p=0.039), compared with PLA. Serum ES, GnRH, DDO and cortisol were unchanged with DAA and/or ZMA treatments.
CONCLUSIONS: The present data suggest that DASP increased the accumulation of DAA in testis and has potential to stimulate the release of TT, FT and GH in rats. ZMA did not appear to affect serum anabolic hormone levels. On the contrary, the combination of ZMA and DASP suppressed the anabolic effects of DASP in rats.

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Effect Of Acute Citrulline-malate Supplementation On Muscular Power

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Citrulline-malate (CM) is a nonessential amino acid that acts as a precursor to l-arginine in the nitric-oxide pathway and may increase exercise performance. While CM is shown to decrease fatigue and improve muscular endurance, there are no data evaluating the effects of CM regarding the effects on muscular power.
PURPOSE: Therefore, the purpose of this investigation was to evaluate the effects of acute CM supplementation on muscular power in recreationally active females.
METHODS: Fifteen females (20.6 +/- 0.8 years) completed two randomized, double blind trials consuming either CM (8 g dextrose+8 g CM) or a placebo (8 g dextrose). One hour after supplement consumption, participants performed a protocol consisting of four exercises designed to assess muscular power. Tests included vertical jump, lower-body isokinetic exercise (ISO; 5 repetition and 50 repetition protocols), and a standard Wingate cycling test.
RESULTS: Throughout the 5 repetition ISO, participants experienced significantly less fatigue (p=.02), as well as substantially increasing work completed in the last third (p=.03). The Wingate cycling test found subjects significantly increased average power (p=.03), anaerobic capacity (p=.02), and total work completed (p=.02).
CONCLUSION: Acute CM supplementation in females increased power and total work while mitigating fatigue. These data indicate athletes may benefit from acutely supplementing CM if they are competing in sports where increases in max anaerobic capacity, power, or decreases in fatigue are beneficial.

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The Effect of Citrulline Malate on Wingate Anaerobic Power Test Performance

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(No relationships reported)

The general public and specifically athletes always look for the next great advantage, whether it be a supplement, exercise modality, or drug. Supplements seem to be staple among athletes.
PURPOSE: To determine if Citrulline Malate has an effect on anaerobic power performance, as measured by the Wingate Anaerobic Power test (WAPT). Several parameters will be tested: peak power, mean power and percentage of fatigue along with Lactate measurements. Evidence of beneficial effects of CM may help athletes who participate in high intensity activities or sports.
METHODS: For this investigation, 21 healthy participants (means± SD: 23±3years of age; 172.2±10.6 cm tall; with a body weight of 79.9±17.7 kg) participated in this study. Subjects were instructed to limit their physical activity 24 hours prior to testing, to be consistent in their dietary intake during the test period. Participants were instructed to refrain from consuming Citrulline or Glutamine or any dietary supplements that contain the aforementioned ingredients during the test period. Each Subject reported three times to the laboratory facilities each separated by at least 48 hours. Each subject was fitted for the optimal seat height on the Lode Excalibur cycle ergometer.
RESULTS: Statistical analysis was completed by a Dependent T-test. The statistics revealed that the Mean Power was significantly greater when Citrulline Malate was consumed(672.96±159.5 watts) as compared to the Placebo(651.96 ±148.77 W). As for the Peak Power and Fatigue Index, there was no significant differences. A significant decrease was seen in the Lactic Acid sample taken immediately after the WAPT when there was a consumption of CM(9.4±2.7mmol) compared to the placebo(10.4±2.4mmol). However, no significance was seen when comparing the accumulation of Lactic Acid 3 minutes post WAPT.