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Effects of short-term ingestion of Russian Tarragon prior to creatine monohydrate supplementation on whole body and muscle creatine retention: a preliminary investigation

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Background

It has been well-established that creatine monohydrate (CrM) increases whole body creatine retention and muscle creatine content. Extracts of Russian Tarragon (RT) have been reported to produce anti-hyperglycemic effects [1] and influence plasma creatine levels during the ingestion of CrM [2]. Theoretically, RT ingestion with CrM may promote greater creatine retention than ingesting CrM alone. The purpose of this preliminary study was to determine if short-term, low-dose aqueous RT extract ingestion prior to CrM supplementation influences whole body creatine retention or muscle creatine content.

Methods

In a double-blind, randomized, and crossover manner; 10 untrained males (20±2 yrs; 179±9 cm; 91.3±34 kg) ingested 500 mg of aqueous Tarragon extract (*Finzelberg, Andernach, Germany*) or 500 mg of a placebo (P) 30-minutes prior to ingesting 5 g of CrM (*Creapure®, AlzChem AG, Germany*) (CrM+RT). Subjects ingested the supplements two times per day (morning and evening) for 5-days and then repeated the experiment after a 6-week wash-out period. Urine was collected at baseline and during each of the 5-days of supplementation to determine urine creatine content. Whole body creatine retention was estimated as the difference from orally ingested CrM (10 g/d) from the amount of creatine excreted daily in urine. Muscle biopsies were also obtained from the *vastus lateralis* at baseline and after 3 and 5 days of supplementation for determination of muscle free creatine content. Data were analysed by MANOVA with repeated measures.

Results

Daily urinary excretion of creatine increased in both groups from baseline (0.4±0.5; 1.9±1.4, 3.5±2.4, 4.4±3.2, 3.9±2.6, 5.2±3.1 g/d; p=0.001) with no differences observed between groups (CrM+P 0.34±0.4, 1.9±1.6, 3.5 ±2.3, 4.7±3.3, 3.2±2.8, 5.0±3.4; CrM+RT 0.5±0.6, 1.7 ±1.1, 3.4±2.7, 4.2±3.3, 4.6±2.2, 5.4±3/2 g/d; p=0.59). Whole body daily creatine retention increased following supplementation (0.0±0.0; 8.2±1.4, 6.5±2.4, 5.6±3.2, 6.1 ±2.6, 4.8±3.2 g/d; p=0.001) with no differences observed between groups (CrM+P 0.0±0.0, 8.1±1.6, 6.5±2.4, 5.3 ±3.2, 6.8±2.8, 5.0±3.4; CrM+RT 0.0±0.0, 8.3±1.1, 6.6 ±2.7, 5.8±3.3, 5.4±2.2, 4.6±3.2 g/d; p=0.59). Total whole body creatine retention during the supplementation period were not significantly different among groups expressed in total grams retained (CrM+P 31.7±11.1; CrM+RT 30.6±10.3 g; p=0.82) or percentage retained (CrM+P 63.4±22.3%; CrM+RT 61.2±19.9%; p=0.82) over the supplementation period. There was significant variability in muscle phosphagen levels, therefore, only muscle free creatine data are reported. After 3 and 5-days of supplementation, respectively, both supplementation protocols demonstrated a significant increase in muscle free creatine content from baseline (4.8±16.7, 15.5±23.6 mmol/kg DW, p=0.01) with no significant differences observed between groups (CrM+P 9.3±14.3, 22.8±28.2; CrM+RT 0.3±18.4, 8.1±16.2 mmol/kg DW; p=0.34).

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In percentage terms, muscle free creatine content in both groups increased over time (p=0.008) by 10.9±27% and 23.5±34% after 3 and 5-days, respectively, with no differences observed between groups (CrM+P 0.0±0.0, 21.1±30, 37.3±42; CrM+RT 0.0±0.0, 0.7±21, 9.6±18 %, p=0.13).

Conclusions

Results indicate that ingesting as little as 5g of CrM taken twice daily increases total muscle creatine content by 23.5 ±34.5%. However, our preliminary findings indicate that ingesting RT 30-min prior to CrM supplementation did not affect whole body creatine retention or muscle free creatine content during a short-period of creatine supplementation (10 g/d for 5-days) in comparison to ingesting a placebo prior to CrM supplementation. Additional research is needed with a larger sample size to examine: 1.) whether ingestion of greater amounts of RT prior to and/or in conjunction with CrM ingestion would affect creatine retention; 2.) whether ingestion of RT with CrM over longer periods of time would affect creatine retention; and, 3.) whether co-ingesting RT with CrM and carbohydrate may reduce the need for ingesting carbohydrate with CrM in order to promote greater creatine retention.

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