

# CREATINE MONO

## Common Names

Creatine Monohydrate

## Description

Creatine Monohydrate is a white, odorless crystalline powder, clear and colorless in solution. In Germany, it is known as Kreatin rein. Pharmacological Properties Creatine Monohydrate has the formula  $C_4H_9N_3O_2 \cdot H_2O$ . Creatine is the guanidine-derived, phosphorylated compound which maintains cellular ATP homeostasis in the higher animals.

Creatine occurs in highest Concentrations in skeletal muscle, followed by cardiac and smooth muscle, brain, kidney and spermatozoa. Strenuous exercise rapidly uses up cellular reserves of creatine phosphate to replace ATP, the only chemical that powers muscle contraction and relaxation. Creatine Monohydrate is a very bioavailable source of creatine, which can readily combine with normally abundant phosphorus stores to replace creatine phosphate. Six subjects performing 5 sets of 30 maximal contractions with one-minute recovery periods had greater peak muscle torque production in the final 10 contractions of set 1, throughout sets 2 to 4, and during the middle ten contractions of set 5 after creatine monohydrate supplementation for 5 days, compared to baseline performance and to six subjects taking placebos. They also had lower plasma ammonia accumulation, supporting the hypothesis of improved ATP replacement. No difference was seen in blood lactate levels. The body shows an adaptive response, building creatine stores in the muscles more rapidly when subjected to at least an hour a day of intense exercise along with frequent creatine-loading. "One hour of hard exercise per day using one leg augmented the increase in total creatine content of the exercised leg, but had no effect on the collateral."

## Standard

NLT 99% Creatine Monohydrate

## Contraindications / Toxicity

The oral LD50 in mice is in excess of 9,000 mg per kg body weight. Non-toxic. No side effects were reported in the research.

## Suggested Use

5 grams in water, four to six times per day, for at least two days, accompanied by at least one hour of intense exercise per day, for athletic performance. 5 grams corresponds to the creatine content of 1.1 kilograms of fresh, uncooked steak.

## Indications

Wound healing, athletics (especially anaerobic exercise), animal feed supplement (e.g. horse racing), and flavoring formulas.

## References

- Harris, R. C., et al. (1992) Elevation of creatine in resting and exercised muscle of normal subjects by creatine supplementation. *Clinical Science* 83: 367-74.
- Greenhaff, P L., et al (1993) Influence of oral creatine supplementation of muscle torque during repeated bouts of maximal voluntary exercise in man. *Clinical Science* 84; 565-71.
- Hackman, R. (1994) Creatine: Muscle Energy Wonder. *Health Foods Business* January 16, 21.

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