



MONTIFF INC

*Don Tyson's Advanced Nutraceuticals*

## PURE ORNITHINE- $\alpha$ -KETOGLUTARATE

**Ornithine- $\alpha$ -Ketoglutarate**, a powerful compound & precursor, has beneficial effects on hormones, the immune system, promotes healing in surgical and trauma cases and has anabolic properties.

Each capsule contains 500 mg. of pure Ornithine- $\alpha$ -Ketoglutarate.

### RECOMMENDED TO ENHANCE STRUCTURE & FUNCTION RELATING TO NUTRITIONAL NEEDS AND DEFICIENCIES PERTAINING TO:

- Glutamine production, since OKG is a precursor for, and regulator of this amino acid.
- Protein synthesis, especially for Arginine, Proline and Polyamines.
- Metabolic reaction to trauma, since OKG helps counteract its effects.
- Increasing nitrogen balance, which is especially necessary for burn patients and those with low nitrogen levels.
- Stimulating the immune system.
- Beneficial metabolic properties for wound and post surgical healing.
- Anabolic effects on muscle catabolism.
- Athletes who require anabolic results.

### WHAT IS ORNITHINE- $\alpha$ -KETOGLUTARATE?

OKG (a salt formed from one molecule of  $\alpha$ -Ketoglutarate ( $\alpha$ -KG) and two molecules of Ornithine) is a metabolic regulator and precursor for Glutamine and Arginine. Glutamine availability promotes protein synthesis in skeletal muscle. There is a correlation of low Glutamine levels with a reduction of protein synthesis, and increasing protein degradation. OKG is also a precursor for other amino acids and keto acids, which are important for protein synthesis, such as Proline and  $\alpha$ -Ketoisocaproate. Ornithine- $\alpha$ -Ketoglutarate has a secretagogic effect on hormones such as insulin and human growth hormone, and has an anabolic effect on muscles.

### SURGICAL AND WOUND HEALING

OKG is a precursor for Glutamine and has a key function in Polyamines, which are important for cell function and protein synthesis necessary for wound healing and the immune system. It also stimulates the growth of cultured human fibroblasts. In a double blind study of patients undergoing reconstructive surgery, those receiving 10-15 grams orally showed rapid wound healing. Surgical patients in other studies showed increased healing and reduced complications when administered OKG, confirming its potent effect on wound healing. Another controlled study showed an increase in the recovery rate of elderly patients with decubitus ulcers. Administration of OKG can also help prevent muscle catabolism for those in surgical recovery.

### ATHLETES

Ornithine- $\alpha$ -Ketoglutarate when combined has a greater anabolic effect than when the individual properties are given separately. It is the precursor to Glutamine (the most abundant amino acid in muscle tissue), increases Arginine in muscles, and is involved in the production of the branched chain amino acids as well. OKG has an effect on anabolic hormones, such as insulin and human growth hormone and dramatically increases the blood levels of human growth factor-1. It can also help with ammonia detoxification. High ammonia levels are prevalent in body builders and other athletes. There also appears to be a connection between the Polyamine biosynthesis pathway and the anabolic effects of the Ornithine- $\alpha$ -Ketoglutarate.

## OKG AND BURN INJURIES

OKG has been administered of up to 20 grams per day in burn patients, and double blind studies showed increased healing rates with decreased days spent in the hospital. Burn patients have low nitrogen levels and are in a high catabolic state. OKG increases nitrogen balance, by increasing protein synthesis, and stimulates anabolic activity. Better clinical recovery has been reported in the patients receiving Ornithine- $\alpha$ -Ketoglutarate. Doses of Ornithine- $\alpha$ -Ketoglutarate have been administered orally and by IV administration in several medical studies of burn patients. One publication noted that bolus doses (significant doses of oral supplementation) resulted in higher metabolite production compared with continuous infusion.

## THE IMMUNE SYSTEM

Studies have noted increased lymphocyte counts with OKG supplementation. OKG stimulates response to mitogens, synthesis of immunoglobulins and cell function, and has anti-tumor effects as well.

## TRAUMA AND SEPSIS

In studies of patients with trauma and sepsis Ornithine- $\alpha$ -Ketoglutarate limits the drop in plasma Glutamine, which results from these conditions. Those administered OKG had increased food intake and nitrogen balance. The anabolic effect of OKG supplementation has helped prevent muscle catabolism of patients recovering from these conditions.

## ADDITIONAL REPORTED BENEFITS OF ORNITHINE- $\alpha$ -KETOGLUTARATE

- OKG supplementation has increased the food intake of elderly patients.
- It has been administered to children with short bowel syndrome (Chrons disease), and they exhibited an increase of height and weight.
- Individuals with degenerative diseases (such as cancer), who have low nitrogen balance and catabolism, have increased food intake and improved nitrogen balance when OKG is administered.

## BENEFITS OF MONTIFF ORNITHINE- $\alpha$ -KETOGLUTARATE

Montiff provides *the highest quality, pure* Ornithine- $\alpha$ -Ketoglutarate.

**DIRECTIONS:** Take 1-2 capsules per day, or as needed, on an empty stomach with water or fruit juice. Do not take with dairy products. Vitamins and minerals are necessary for proper metabolism, and Montiff Vita-Minz Plus and B-Complete or B-Long are recommended. 1-3 c. of L-Glutamine is also suggested to increase anabolic activity.

- For high endurance athletes and body builders, take 1-3 grams per day. Super Sports Amino Acid Formula and Super Sports Creatine are also recommended.
- Surgical patients 1-3 grams or more per day, until complete recovery. ALL-Basic Amino Acid formula is also recommended 2-3 T.I.D.

## REFERENCES

- Cynober, Luc (edited by), Amino Acid Metabolism and Therapy in Health & Nutritional Disease, 1995, and "The Use of Alpha-Ketoglutarate Salts in Clinical Nutrition and Metabolic Care", *Curr Opin Clin Nutr. Metab Care*, 1999.
- Cynober L, Coudray - L, "A Rational for OKG in Administration in Surgical & Trauma Patients", Amino Acids in Surgery; Latifii, ed, 1994.
- Di Pasquale, M, Amino Acids and Proteins for the Athlete, the Anabolic Edge, 1997.
- Latifi, Rifat, M.D., Amino Acids in Critical Care and Cancer, 1994.
- Jeevanandam M, "Ornithine Alpha-Ketoglutarate in Trauma Situations", *Clinical Nutrition*, 1993.
- Le Bricon T., Coudray-Lucas C., Lioret N., et al. "Ornithine Alpha Ketoglutarate Metabolism after Enteral Administration in Burn Patients: Bolus Compared With Continuous Infusion". *American Journal of Clinical Nutrition*, 1997.
- Pradoura J. et al "Incid. De L'Oxoglutarate d'Ornithine sur la reparation cutanee des malades de carcinologie cervico- faciale operes", *Cah. ORL.*, 1990.
- Bouchon Y., Merle M. "L'- $\alpha$  Cetoglutarate d'Ornithine per os dans la Prevention des Complications Locales de la Chirurgie Plastique," *Ann Chir. Plast, Esthet* 1984.
- Mettelal J., Womarck Y, Berthaux P, "Comparison en double aveugle des effets de l'oxoglutarate d'ornithine sur le comportement aliment des sujets ages", *Rev. Geriatric*, 1990.
- De Brandt TJ, Cynober L, "Amino Acids with Anabolic Properties", *Curr. Opin Clin Nutr. Metab. Care*, 1998.
- Donati L, Ziegler F., Pongelli G, Signorini S, "Nutrition and Clinical Efficacy of Ornithine Alpha-Ketoglutarate in Severe Burn Patients", *Clinical Nutrition*, 1999.

COPYRIGHT 4/2000©