WHAT ARE AMINO ACIDS

&

FOREVER YOUNG

Another in the Life Sources' Client Education Series

This pamphlet is complimentary to Life Sources' clients.
This pamphlet may be purchased by the general public from:

Life Sources, Inc.

5006 Sunrise Blvd., Suite.101

Fair Oaks, California 95628

916-536-9930

www.life-sources.com

What are Amino Acids?

Life Sources' ***Forever Young*** is a product to be excited about! As we age, certain amino acids and hormones are either no longer produced or appear in reduced amounts in the human body. By replacing these amino acids, research has shown that **aging can not only be stopped, but reversed by as much as 10-15 years.**

When used in a total protocol, our clients report that ***Forever Young*** has improved their immune function (fewer colds and flu), elevated their moods, normalized blood pressure, increased energy levels, improved sexual function, improved memory and vision, restored hair color and decreased body fat while improving muscle mass.

The 23 or so amino acids found in Life Sources' ***Forever Young*** are the molecular building blocks of proteins. According to one accepted classification, 9 are termed indispensable amino acids (IAA, sometimes called essential), meaning that they must be supplied from some food or supplement source; the others, which used to be classified simply as nonessential, are now more correctly termed dispensable amino acids (DAA) or conditionally indispensable, based on the body's ability to synthesize them from other amino acids.

You may not give it much thought when you sink your teeth into a chicken breast (or lentil stew), but the content and balance of amino acids, particularly the ratio of IAA to DAA, is what determines the body and health building value of a protein food or supplement. But that isn't all that matters.

In addition to being influenced by the carbohydrates, fats and total calories associated with it, protein quality is related to the amount of the specific aminos within both the IAA and DAA categories (for example, the amount of glutamine and branched chain amino acids, or BCAAs - leucine, isoleucine and valine). While the amount of IAAs are generally of greater importance, the DAAs are also significant because they're synthesized too slowly to support maximum growth. Even if a source has a perfect amino acid profile for a given individual and lifestyle, another important factor - to what extent these acids are actually delivered to the tissues when needed - must be considered. That, in turn, raises the issues of digestion, absorption, actual **bioavailability** and the potential value of supplementation.

What is Bioavailability?

Eating quality food is the most common way to get amino acids into the diet, especially high protein foods like lean meats and nonfat dairy products. Even

some vegetables and legumes can offer high levels of most amino acids. For serious athletes and those on the run, protein powders and pure free form amino acids provide a convenient and effective means to supplement dietary needs.

Why would people pay relatively large sums of money for only a few grams of pure cheaply? Because of bioavailability.

Bioavailability gauges the extent to which an administered substance reaches its site of action or utilization in the body. Bioavailability is thus a measure of the efficiency of delivery - how much of what is ingested is actually used for its intended purpose.

Conceivably, two diets could contain exactly the same amount of particular amino acids (the same amino acid profile) but have significant differences in their absorption. A number of factors affect amino acid bioavailability (see **Factors Affecting Amino Acid Bioavailability**).

The most reliable way to deliver specific amino acids is to administer the particular amino acids themselves. The most bioavailable source for oral use is powdered free form amino acids.

A singular (unbonded) amino acids can specifically elevate its level in the general circulation within 15 minutes, making it readily available for metabolism at the site where it's needed. Hence, for example, the recommendation to use BCAAs before, during and after training both to prevent central / mental fatigue, as well as to provide a source of energy to help prevent muscle protein catabolism and to speed recuperation.

Applications to Bodybuilding

Muscle tissue will grow in the presence of a number of factors, including exercise, hormones (growth hormone, insulin, testosterone and thyroid) and nutrients. Nutrition science has advanced to the point where athletes who supplement with free form amino acids can get IAAs, high in BCAA content, to the muscles much more effectively.

The key is the window of opportunity that occurs immediately after exercise, when the muscle is especially receptive to nutrients and the blood flow to the exercised muscles remains high. The solution to optimizing recovery and growth in this case could include eating a small meal composed of protein with both simple and complex carbohydrates.

This isn't the current high tech approach, however. For one, if you trained hard, chances are - even if a convenient and light, nutritious meal was readily available - you wouldn't feel like eating. More important, a high protein meal won't put

significant levels of amino acids into your bloodstream until a couple of hours after you eat it, especially if blood flow to the gastrointestinal tract has been diminished by a hard training session. The bottom line: Even if you eat the right foods soon after training, the nutrients will arrive at the muscle too late to take full advantage of the window of opportunity.

Directed Amino Acids

Supplement manufacturers recognized the potential value of free-form amino use was limited by their expense and a relative lack of convincing supportive research for a number of years, their popularity has recently increased dramatically. Prepackaged workout and recovery drinks containing hydrolyzed (predigested) proteins and often some free-form amino acids now fill gym refrigerators. Capsules and powdered free-form amino acids, although still somewhat expensive, are likewise being used by increasing numbers of top amateur and professional athletes.

The value of free-form amino acids is first and foremost that they don't require digestion. The term 'free-form' means exactly that: They are free of chemical bonds to other molecules and so move quickly through the stomach and into the small intestine, where they're rapidly absorbed into the bloodstream.

Upon absorption, amino acids are processed by the liver. When you eat a steak, for example, only relatively few amino acids escape the metabolic actions of the liver. Yet the liver can process only so many at one time, and taking a dose of 3-4 grams of rapidly absorbed amino acids exceeds the liver's capacity, resulting in the aminos being directed to the tissues that require them, such as muscle in the case of bodybuilder recovering from training. Thus, the concept of 'directed amino acids'.

While sound in theory, does it work in practice? As early as 1990, the Bulgarian national weightlifting team began trials to determine if free-form amino acids were a boost to muscular growth. The work was so successful that part of the study was replicated on the Colorado Springs Olympic Training Center. Since then, top bodybuilders and powerlifters around the world today - including Mr. Olympia Dorian Yates, and 'Mr. Powerlifting' Ed Coan - have benefited from this new research.

Amino Acids for Energy

Many misconceptions exist about the muscle contraction and the use of energy substrates during heavy during heavy, high-intensity weight training. When you're

engaged in a repetitive power workout, a substantial portion of your energy comes from noncarbohydrate sources. When muscle contracts, it uses its stores of adenosine triphosphate (ATP, a substance vital to the energy processes of all living cells) for the first few seconds. The compound used to immediately replenish these stores is creatine phosphate (CP). The recent explosion of creatine supplements in the market attests to its value to hard training bodybuilders and other strength / power athletes.

CP is made from three amino acids: arginine, methionine and glycine. To keep CP and ATP levels high, these amino acids must be elevated in the bloodstream. Traditionally, these proteins have been supplied by foods in the diet. Elevating levels of these amino acids or of CP with conventional foods takes a great deal of time (for digestion) and isn't specific, typically providing levels of fats and carbohydrates that may or may not be desired. The use of free-form amino acids, alone and in combination with creatine supplements, can provide directed source of energy for power and growth.

Amino Acids & Fat Loss

In fat loss, two major processes must occur: 1) the mobilization and circulation of stored fats in the body must increase; and 2) fats must be transported and converted to energy at the powerhouse site of cells, the mitochondria. Several nutrients can assist in the conversion of fat to energy, including lipotropic agents such as choline, inositol and the IAA methionine which, in sufficient quantities, can help improve the transport and metabolism of fat.

Supplementation with complete IAA mixtures, BCAAs and glutamine can also help keep calorie and food volume down while providing targeted support directly to the muscles, liver and immune systems so critical to optimizing body composition.

Reducing Muscle Catabolism

The human body has the innate ability to break down muscle tissue for use as an energy source during heavy exercise. This muscle catabolism can cause muscle soreness, shrinkage of muscle tissue and may even lead to injury.

This enemy to bodybuilders is part of a process known as gluconeogenosis, which means producing or generating glucose from noncarbohydrate sources. The part of this reaction that of importance to bodybuilders is known as the glucose - alanine cycle, in which BCAAs are stripped from the muscle tissue and

parts of them are converted to the amino acid alanine, which is transported to the liver and converted into glucose.

If you consume supplemental BCAA's. The body does not have to break down muscle tissue to derive extra energy. A study conducted recently at the School of Human Biology, University of Guelph, Onterio, Canada, confirmed that the use of BCAA's (up to 4 grams) during and after exercise can result in a significant reduction of muscle breakdown during exercise.

In addition to BCAAs, arginine is another amino acid that may benefit bodybuilders. Though it did not live up to its early hype, which touted the amino acid's ability to raise growth hormone level, new data indicate that arginine - in large but safe and affordable doses - may be able to raise GH levels by up to 1,000%.

Free-Form vs. Di & Tripeptides

The form an amino acid takes has been a confusing subject for a number of years, partly because of research that demonstrated superior absorption of purified di- and tri-peptides fragments. Di- and tri-peptides are simply two and three amino acid molecules bound together, respectively, as opposed to the single molecules of free-form amino acids.

The fact is, pure, powdered free-form amino acids are absorbed from the small intestine into the bloodstream and are available to the tissues very quickly. The problem with pure di- and tri-peptides isn't their bioavailability but available to consumers. Moreover, hydrolyzed proteins such as whey and lactalbumin are not necessarily good sources of di- and tri-peptides. They generally contain very few of these amino acid combinations, and what few they have may get lost in the general wash of longer chain peptides contained in these hydrolysates.

So while pure di- and tri-peptides are efficient in their ability to be absorbed into the bloodstream, pure free-form amino acids are equal or superior for bodybuilders and other athletes and more important, are as close as your nearest health food store.

Factors Affecting Amino Acid Bioavailability

How fat you eat a protein source and the length of time it takes for the digested amino acids to be available for use by the body are determined by a number of factors, which include:

· Cooking - Amino acids are more or less sensitive to heat. For example, arginine is extremely stable and will decompose only if exposed to sustained temperatures about 470 degrees F. Carnitine decomposes at temperatures of 284 F. Cooking, in addition to killing micro-organisms, makes the long spiral polypeptide chains unwind, causing the amino acid to become more exposed when it reaches the digestive system.
· Physical nature of the food, whether solid, liquid, powder or tablet; whether and to what extent chemically predigested and the type and amounts of binders, fillers and other nutritive and non-nutritive materials.
· Status of the digestive system - Genetics, age, overall health and specific diseases and illnesses.
· Metabolism or utilization by the intestine before absorption - such as occurs with glutamine.
· Metabolism or utilization in the liver before transfer to the general circulation - For maximal directed effects, amino acids should be taken on an empty stomach and in a dosage that enables significant quantities to reach the target tissues.

Company Profile

Life Sources, Inc. is a Nevada Corporation with order fulfillment located in Fair Oaks, California and is a member of the NNFA, The National Health Federation and the Citrus Heights, California Chamber of Commerce.

The President and Founder is Andrea McCreery, Ph.D. Dr. McCreery is currently developing several new proprietary products to add to the Life Sources anti-aging and chronic illness system.

Her talents represent 10 years of research in nutrition, bio-energetics and **T**argeted **N**utritional **I**ntervention.

Based upon clinical observations, Dr. McCreery has developed several innovative products designed to slow the aging process and naturally combat chronic illnesses. Nutritional counseling is effective with ADD/ADHD, fibromyalgia, chronic fatigue syndrome, irritable bowel syndrome, weight loss, arthritis, candidiasis and more.

Life Sources specializes in Vital Hematology as a means of observing cell wall deficient forms in the living blood of clients to recommend nutritional interventions to reverse risk factors for chronic disease and nutritional deficiencies. (If an individual is interested in scheduling a consultation, please e-mail for details and fee schedules to andrea@life-sources.com or call the clinic at 916-536-9930.

The Life Sources clinic is located at 5006 Sunrise Blvd., Suite 101, Fair Oaks, California 95628. Initial client visit includes the observation of living blood (with a videotape of the observation included), blood typing and nutritional counseling for chronic illness and potential risk factors.

Individuals interested in scheduling a seminar or group demonstration of Vital Hematology should address e-mail to andrea@life-sources.com.

Life Sources is dedicated to quality and quantity of life and the eventual reduction of health care costs in the U.S. Client support is appreciated.