



PRODUCT DESCRIPTION

1. Q. What is ATP?

A. ATP is an abbreviation for adenosine 5'-triphosphate, commonly known as “the universal energy storage molecule.” ATP exists both inside (intracellularly) and outside (extracellularly) virtually every cell of the body. The role of **intracellular ATP** has been well established – it is largely responsible for the energetics, function and survival of cells. When the phosphate bonds of ATP are broken down, the energy released powers all body functions. **Extracellular ATP** regulates many physiological responses – such as vascular, cardiac and muscle functions – by interacting with specific ATP receptors on cell surfaces. Interestingly, when intracellular ATP becomes depleted, extracellular ATP can cross into cells via its catabolic components, adenosine and inorganic phosphate. While ATP is generally manufactured in the body on a continual basis, age, exercise and other stressors can significantly reduce or deplete its levels.

Through an exclusive license agreement with Dr. Eliezer Rapaport, a widely recognized expert in adenosine nucleotides, TSI Health Sciences, Inc. (TSI) is the only company to manufacture patented ATP as a novel nutraceutical ingredient.

2. Q. What does PEAK ATP® do?

A. TSI's patented PEAK ATP elevates the body's extracellular ATP levels. Scientific evidence has demonstrated that extracellular ATP is a major regulator of vascular, cardiac and muscle functions. By activating specific ATP receptors present on vascular endothelial cells (the cells that line the blood vessel walls), ATP improves blood vessel tone and increases vasodilation, which reduces pulmonary and systemic vascular resistance (the resistance of the vessels to blood flow). These actions stimulate blood flow to peripheral areas without affecting blood pressure or heart rate.

Not only is exogenous ATP cardioprotective, but it also enhances the delivery of glucose, nutrients and oxygen to working and recovering muscles. Additionally, it helps remove catabolic waste products. These mechanisms improve physical performance, benefit muscle growth, strength and recovery, and increase overall energy levels. What's more, increases in extracellular ATP have also been demonstrated to enhance cerebral blood flow and metabolism – boosting mental acuity and potentially lessening the perception of fatigue and/or exercise-associated pain.

3. Q. Other products on the market claim to increase ATP levels. What makes PEAK ATP® unique?

A. Dietary supplements currently available and claiming to enhance physiological ATP synthesis – such as creatine, coenzyme Q10, pyruvate, and ribose – have *never* been demonstrated experimentally to elevate intracellular or extracellular ATP levels. Only the exogenous administration of *ATP itself* has been shown to effectively elevate ATP levels and provide the associated physiological benefits.

Decades of exhaustive research by Dr. Eliezer Rapaport, considered one of the world's foremost authorities on ATP, have resulted in a unique portfolio of ATP patents. Based on his landmark research and expertise, TSI can now introduce the first legitimate entry of ATP into the supplement marketplace. TSI's PEAK ATP is the *only* ATP clinically tested to demonstrate its effectiveness, and the *only* ATP backed by Dr. Rapaport's research and patents. TSI has also developed both domestic and foreign patent-pending ATP technology specifically for the administration of our ATP formulation in reducing muscle fatigue and enhancing human performance.

SCIENTIFIC EVIDENCE & SAFETY

1. Q. What data exists to show PEAK ATP® is efficacious?

A. Studies on cells, animals and humans suggest that exogenous administration of ATP increases the circulation to peripheral sites. Increased blood flow has a host of benefits, since blood is the delivery source of glucose, nutrients and oxygen for tissues. Research shows that PEAK ATP can elevate the body's extracellular ATP levels, making it effective for a variety of indications, such as energy, athletic performance and anti-aging. In fact, several published human studies in which ATP was administered intravenously have reported significant physiological and metabolic improvements. Pioneering animal studies have shown that chronic oral administration of ATP produces notable beneficial alterations in the host's physiology, including improvements in muscle metabolism, increases in peripheral blood flow and blood oxygenation.

2. Q. How does PEAK ATP® elevate the body's extracellular ATP levels?

A. After ingestion, PEAK ATP is broken down into adenosine and inorganic phosphate. Following rapid absorption by the gut, these compounds are incorporated into and expand the body's liver ATP pools. Detailed experimental animal studies have demonstrated that the turnover of the expanded liver ATP pools supply the necessary precursor, adenosine, for red blood cell ATP synthesis. In sum, exogenously administered ATP elevates liver ATP pools, which in turn yields elevated red blood cell ATP pools. Subsequently, the expanded red blood cell ATP pools are slowly released into the blood plasma (extracellular). Animal and human studies have both conclusively shown that oral administration of ATP elevates ATP levels in liver, red blood cells and blood plasma.

3. Q. Are these extracellular ATP levels measurable?

A. Yes. Research has shown that when PEAK ATP is taken orally, it enters the blood and creates a measurable increase in circulating ATP levels for at least six hours. Analyses to determine red blood cell levels of ATP are complex and require special equipment and procedures. TSI has partnered with Dr. Edward Abraham, the inventor of specific methods used to measure circulating ATP concentrations (patent pending), in order to convincingly demonstrate PEAK ATP's effect on circulating ATP in clinical settings.

These methods include utilizing a Packard Instrument Company 12-detector luminometer to perform the firefly luciferase assay. The luciferin/luciferase reaction assay has a threshold for ATP detection in the subnanomolar concentration range.

4. Q. Is it possible to trace the path of orally administered ATP?

A. Yes. Mechanistic and pharmacokinetic studies have been conducted with radioactively-labeled ATP in mice to establish the bioavailability of orally administered ATP, to define the path of the ATP in the body and to establish pharmacokinetic parameters such as half-life, clearance and volume of distribution.

5. Q. How safe is PEAK ATP®?

A. PEAK ATP is not a stimulant. It does not affect heart rate nor does it increase blood pressure. In fact, no adverse side effects whatsoever have been observed in the pilot studies and human trials conducted with PEAK ATP.

An LD 50 Acute Toxicity Study, commissioned by TSI and performed at the Shanghai Institute of Materia Medica (SIMM), demonstrated that PEAK ATP is safe and non-toxic. In the experiment, PEAK ATP was given to rats at doses as high as 15.0 g/kg body weight, and produced no toxicity, mortality or adverse reactions. Likewise, research investigating the active compound in PEAK ATP has concluded it is a safe and non-toxic as well.

6. Q. Is there any doping test risk for athletes using PEAK ATP®?

A. No. ATP does not appear on any prohibited substance list, and TSI has consulted the

International Olympic Committee to confirm the ingredient's standing. Because body stores of ATP can only be increased to certain levels, use of the ingredient as a dietary supplement does not fit the definition of doping.

USAGE, STORAGE & STABILITY

- 1. Q. What is the suggested dose for PEAK ATP® and how should it be taken?**

A. TSI's recent clinical work suggests the greatest efficacy of PEAK ATP is achieved when two (2) 125 mg doses of PEAK ATP's active compound, ATP disodium, are taken per day. TSI suggests administration of one (1) dose of 125 mg in the morning and one dose (1) of 125 mg in the afternoon, both on an empty stomach.
- 2. Q. Is that a sufficient dose for weighing 170 pounds or more?**

A. Yes. Research conducted to date has focused on athletes weighing approximately 190 pounds. While no clinical data exists to demonstrate better efficacy with higher dosing, individual weight and metabolism will vary. Some variation in dosage may be necessary to find the dose that yields the best individual results.
- 3. Q. Can other products be used in combination with PEAK ATP®?**

A. Use of other ingredients or products with PEAK ATP is neither encouraged nor discouraged, but because of PEAK ATP's ability to enhance blood flow, it may help the physiological distribution of other products or ingredients within the body. There is no scientific reason to believe that PEAK ATP would hinder the effectiveness of any established dietary supplement product or program.
- 4. Q. How is PEAK ATP® manufactured?**

A. PEAK ATP is produced through a proprietary fermentation process in a GMP facility – the only one in China producing nucleosides and nucleotides on a large scale – that conforms to ISO9002 standards. PEAK ATP is manufactured according to TSI's exact specifications and subjected to rigorous in-house physical, analytical (including HPLC) and microbial testing. Because ATP is subject to some degradation by stomach acids, this material must be formulated to exacting specifications for solid dose delivery products. TSI works closely with our manufacturing licensees to ensure the proper technology is utilized in order to enhance the absorption of ATP into the bloodstream and provide maximum bioavailability for intended applications.
- 5. Q. What specific technology is used to ensure the absorption of PEAK ATP® in solid dose delivery forms?**

A. Most dietary supplements are designed to release their contents into the stomach. In the presence of acid, however, ATP administered in a solid dose delivery form is subject to degradation. To prevent stomach acid from compromising the PEAK ATP in its solid form, we make sure that a protective barrier is utilized. This prevents the breakdown of the compound in the stomach, so that PEAK ATP's active principals, adenosine and inorganic phosphate, are released and absorbed intact.
- 6. Q. How is this different from the way other ATP products are offered?**

A. TSI holds an exclusively licensed suite of issued patents and patent-pending applications for oral ATP administration. We also have our own domestic and foreign patent-pending technology. Any company that uses an ATP ingredient, other than PEAK ATP, in its products is infringing on TSI's exclusive patents. It's no surprise, then, that the majority of companies offering ATP in their products do not use or specialize in the specific manufacturing processes needed to protect this fragile compound in its solid dose delivery form. What's more, they may not subject their products to rigorous quality assurance testing methods required of all PEAK ATP licensees. All PEAK ATP licensees' products are manufactured under strict quality controls. TSI requires that our licensees test their products for a specific dissolution, using current USP methods and conduct post-manufacturing ATP assays using HPLC technology.

7. Q. How should PEAK ATP® be stored?

A. TSI has detected no degradation of PEAK ATP during the course of our raw material stability tests. As provided to dietary supplement manufacturers, the ingredient has a two-year shelf life, as long as its containers remain unopened and are kept under optimal conditions.

Capsules and tablets containing PEAK ATP should always be stored in cool, dry conditions and used prior to the expiration date.

OTHER GENERAL QUESTIONS

1. Q. Is ATP only good for anaerobic forms of exercise?

A. No. While some supplements are only associated with assisting explosive power sports like weight lifting and sprinting, ATP is inherently involved in far more body processes than just muscle contractions. Its extracellular roles produce a multitude of physiological benefits that ultimately assist in aerobic forms of exercise too.

2. Q. Will PEAK ATP® inhibit the body's ability to produce ATP naturally?

A. No. While PEAK ATP is capable of elevating or restoring organ, red blood cell and blood plasma ATP pools in humans to their normal levels, exogenous administration of ATP could never take the place of metabolically generated ATP. Where there is no ATP, there is no life.

3. Q. Do only bodybuilders realize the benefits from taking PEAK ATP®?

A. No. Anyone who is interested in greater energy levels or enhanced athletic performance can benefit from taking PEAK ATP. PEAK ATP additionally has distinct benefits for anyone experiencing the effects of aging, as it supports cardiovascular health, vascular functions, and mental acuity by increasing circulation.

4. Q. How long does it take to attain benefits from PEAK ATP®?

A. Several human pilot and animal studies indicate that cardiovascular, circulatory and vascular system benefits are realized almost immediately upon taking the ingredient. Logging statistically significant performance results, however, requires chronic dosing for at least two weeks.