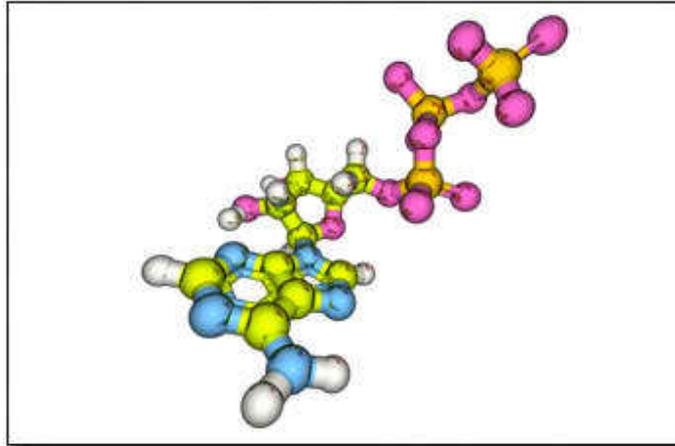


From our friends at "Back to Herbs"



## D-Ribose

D-Ribose is a sugar (derived from glucose) that has been shown to boost levels of the energy compound ATP. Some studies have shown that chronic fatigue syndrome patients have lower than normal levels of ATP and D-Ribose could be used to increase energy production in the muscles and heart.



D-Ribose is one of those supplements that have garnered a lot of attention recently. It is a 5-carbon sugar (unlike 6-carbon glucose sugar) directly involved in the production of "ATP," the fuel that every cell in the body uses for its energy production. D-Ribose doesn't raise blood sugar; rather it's directly converted to ATP. It can even lower blood sugar.

Supporters of D-Ribose claim it decreases pain, improves mental clarity, increases energy, improves stamina, creates an improved sense of well being, and strengthens heart performance. Uses for D-Ribose range symptoms of chronic fatigue syndrome or fibromyalgia to athletes looking to improve their exercise endurance. It may also be helpful to those who experience muscle aches and pains as a side effect of cholesterol-lowering statin drugs.

ATP is short for adenosine triphosphate, a crucial chemical in human metabolism that has been called "chemical currency" because the cells use it as a direct source of energy. ATP is manufactured in the body from sugars and other nutrients, and cells consume ATP when they engage in activities like building larger molecules and producing movement.

D-ribose, a natural occurring pentose carbohydrate, has repeatedly shown to enhance high-energy phosphates and improve function following ischemia (a restriction in blood supply), states of congestive heart failure, and recently in subjects with lung disease. Patients with chronic coronary heart disease often suffer from congestive heart failure (CHF) despite multiple drug therapies. D-Ribose has been shown in animal models to improve cardiac energy metabolism and function following ischemia.

An initial preliminary, open label pilot study demonstrated a positive benefit of D-ribose in "Baby-Boomer" subjects aged 50 to 65 years old complaining of persistent fatigue. Fibromyalgia (FMS) and chronic fatigue syndrome (CFS) are debilitating syndromes that are often associated with impaired cellular energy metabolism. As D-ribose has been

shown to increase cellular energy synthesis in heart and skeletal muscle, an open-label uncontrolled pilot study was done to evaluate if D-ribose could improve symptoms in fibromyalgia and/or chronic fatigue syndrome patients.

D-ribose, which was well tolerated, resulted in a significant improvement in all five visual analog scale (VAS) categories: energy; sleep; mental clarity; pain intensity; and well-being, as well as an improvement in patients' global assessment. Approximately 66% of patients experienced significant improvement while on D-ribose, with an average increase in energy on the VAS of 45% and an average improvement in overall well being of 30%.

**Conclusions of the study:**

D-ribose significantly reduced clinical symptoms in patients suffering from fibromyalgia and chronic fatigue syndrome.

ATP is a relatively small molecule that serves as an "energy intermediate" in human metabolism. Cells extract chemical energy from various nutrient molecules like carbohydrates and proteins, and use the chemical energy to make ATP. The cells then break down ATP, releasing energy, as they engage in a variety of activities, explain Drs. Reginald Garrett and Charles Grisham in their book "Biochemistry."

As the cells break down glucose, they produce the waste products carbon dioxide and water. They use the energy liberated from breaking down a single molecule of glucose to make approximately 30 molecules of ATP. Once a cell has made ATP, it can use the ATP to fulfill any of its energy needs. Cells need energy to make large molecules, like hormones. Muscle cells use ATP to produce movement. As a cell makes a hormone molecule, it breaks down molecules of ATP and uses the energy to make new bonds between smaller molecules in order to produce a larger one. When a muscle cell contracts, it uses large quantities of ATP to fuel the contraction.

One final important role of ATP in the body is to serve as a cellular signal. For instance, since cells can either burn nutrients immediately or store them for later use, the cells use ATP to help them determine which they should do. If a cell has plenty of ATP, the ATP signals the cell to store nutrients rather than burning them. If a cell is low on ATP, however, that signal indicates that the cell should burn nutrients immediately.

The increased levels of ATP may help relieve fatigue by provide the muscles with extra energy. D-Ribose also helps the body to recycle ATP, and use its own energy it has more efficiently. A study by well-known chronic fatigue specialist Dr. Jacob Teitelbaum, has shown D-ribose to improve sleep, fatigue, concentration, pain and well-being in patients.

**The Study:**

- There were 36 patients in this study
- The average age of the participants was 48 and was 78% female.
- The patients in this study took D-Ribose at a dose of 5 grams, three times each day.

**Outcome:**

- 69% of the 36 patients had significant improvement. They had 25% improvement in the quality of life, as compared to before the study.

Ribose is used to improve athletic performance and the ability to exercise by boosting muscle energy. During strenuous exercise, large amounts of ATP, the body's primary energy-carrying molecule, can be depleted in heart and skeletal muscle cells. D-Ribose is a simple sugar that is used by the body to synthesize nucleotides, ATP, nucleic acids, and glycogen. Ribose has been used to prevent symptoms such as cramping, pain, and stiffness after exercise in people with an inherited disorder called myoadenylate deaminase deficiency (MAD) or AMP deaminase deficiency (AMPD deficiency). Ribose has also been used to improve exercise ability in people with another inherited disorder called McArdle's disease.

There is some evidence that supplemental ribose might prevent muscle fatigue in people with genetic disorders that prevent sufficient energy production by the body. It might provide extra energy to the heart during exercise in people with heart disease.

It is always prudent to check with a health care practitioner before introducing supplements into a daily regimen, especially if taking prescribed medications or having any condition that may be contraindicated.

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**Yours in Good Health!**

Sincerely,

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The Back to Herbs Team

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