

Boost Energy Levels with D-Ribose

Discovered by Phoebus Levene in 1905, D-ribose is a monosaccharide, and is a component of RNA that is needed for genetic transcription. It is a stereoisomer of ribose, and although not regarded as an essential nutrient since it is synthesized in the body, it is essential for life. It also takes part in human metabolism, helping to generate energy from food, and is a component of all living cells – animal or vegetable. It is contained in ATP and NADH and we could not live without it.

Because it is contained in all living organisms, D-ribose is a common component of the human diet, and required as a supplement only for specific needs. It is for this reason that the human species developed and survived: the chemicals needed for life are either commonly found in nature or are manufactured by the body itself from other raw materials which themselves are common in our diet. The other stereoisomer is L-ribose, and this plays no part in human metabolism.

Energy is needed not only to enable us to walk and to run, but also to drive every part of human physiological activity, and all of the physical and chemical processes of life. Because of its nature energy cannot travel round the body in our bloodstream as if were a chemical entity, but must be released or generated where and when it is needed. For that reason every cell in our body contains an area called the mitochondria in which energy is generated. The molecule of energy, if there is such a thing, is called ATP, or adenosine triphosphate.

ATP controls the production of energy everywhere in the body, and allows muscles to contract and relax. This muscular activity is responsible for all movement, including the circulation of our blood through heart contractions, the diaphragm movement that creates the vacuum that allows us to breathe, and the operation of the digestive system by means of the peristaltic motion of the esophagus and the intestines. Each of the two ways in which ATP is generated involves D-ribose.

One is by means of D-ribose being used to produce new ATP, and the other is the recycling of used ATP. In the latter, D-ribose and ATP react to form ADP (adenosine diphosphate) and D-ribose-5-phosphate with the release of energy. This diphosphate then reacts again with the ADP to produce new ATP and D-ribose. The reaction is catalyzed by an enzyme known as a ribokinase, a phosphotransferase that specifically catalyzes reactions involving phosphorus groups with an alcohol receptor group.

The heart muscle is operated by means of the calcium pump that depends upon both calcium and ATP for its operation. When ADP and phosphate are created by the effect of calcium and ATP coming together, then energy is provided to the muscle fibers of the heart. ADP then reacts with the phosphate and D-ribose in the presence of magnesium to reform the ATP. ATP is therefore essential for the continuation of the pumping action of the heart that maintains life in all mammals.

D-ribose is also part of the base of RNA and DNA, without which there could be no life. Because the cardiac muscle is easily depleted of ATP, the presence of D-ribose is of extreme importance and it has been proved that cardiac failure begins with the reduction in energy levels of the heart muscle that can be brought about by a lack of ATP in the muscle cells.

An important property of D-ribose is that it is unchanged by the liver, which is the chemical plant of your body in which a large part of the biochemistry needed for life takes place. This means that D-ribose can be taken in the diet and pass through the liver virtually unchanged, and then be transported in the bloodstream to where it is needed for the maintenance of ATP levels. That is why D-ribose is frequently given to treat heart attacks: because it can rapidly replace lost ATP and enable the calcium pump to get to work and keep the heart beating at its normal strength. Maintenance levels of this important sugar would not go amiss.

However, there are other uses to which the body can put this marvelous substance. Among these is the body's ability to form Coenzyme A from it. This coenzyme is needed in the body for the breakdown of fatty acids, and many other chemical reactions, and also provides the raw material for many other necessary substances in human biochemistry.

Patients with low energy levels can frequently fail to be able to recover from illness. This is because that when illness stresses your body, your mitochondria become overwhelmed with work and begin to fail to produce sufficient ATP to keep the body going. Naturally, as your energy level drops, and your body cells are unable to respond to this, then the condition you are suffering from gets worse, and become stronger leading ultimately to possible death. Your immune system is put under a great deal of stress that uses up what little ATP you have left.

That is why when people start to get really ill, they tend to fade very rapidly: not because of the spread of the disease, but through a reduction in the ATP needed to provide the energy required for the body to fight the disease. Without an adequate supply of energy, your body would rapidly fade.

By taking a D-ribose supplement that passes unchanged right into your bloodstream and taken to where it is needed most, your body can rapidly generate sufficient ATP to keep up the fight against the agent that is making you ill. Your immune system is given a massive energy boost, and more importantly, your heart is kept beating. D-ribose is the answer to the prayer of many sick people, and also to athletes and bodybuilders needing quick bursts of energy. But what did they use before D-ribose was discovered to have the properties that it has?

At one time, it was adenosine monophosphate (that's right, not ATP or ADP, but AMP) that was administered intravenously to those suffering from chronic fatigue, this substance being synthesized to ATP in the body over a period of time. However, it takes a lot of time to be effective, and the injections had to be made daily into the muscle tissue, so it fell out of favor.

Then came an ATP supplement that could be taken orally, but the side effects were unpleasant, and that too went out of favor. However, towards the end of the 1990's D-ribose was found to overcome all of these disadvantages, and not only be able to be taken orally, but also to work almost immediately by providing the mitochondria with a direct source of the sugar they need to generate energy.

It is now one of the most popular energy providing supplements on the market, and also a remedy for chronic fatigue that helps the patient to overcome energy-sapping medical conditions both directly and by providing the immune system with the energy needed to keep it operating effectively against masses of invading bacteria and viruses. There is nothing better than D-ribose for providing you with the energy boost that you need, whenever you require it, either to provide energy for your sport or to help you overcome illness.

About the Author

More information on [D-Ribose](#) is available at VitaNet ®, LLC Health Food Store. <http://vitanetonline.com/>

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