Doctor's BEST Science-Based Nutrition™

Best D-Ribose
featuring BioEnergy Ribose™

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250 grams

Amount per scoop (5 grams):	
D-Ribose	5g
Calories	20
Calories from Fat	0
Total Fat	0g
Sodium	0mg
Total Carbohydrates	5g
Sugars	5g
Protein	0g

Excipients: None.
Suggested Adult Use: Take 1 or 2 scoops mixed in water, juice or other beverage two times per day. May be taken with or without food.

Best D-Ribose
featuring BioEnergy Ribose™ capsules

120 Veggie Caps

Ingredients per capsule:

D-Ribose	850mg

Excipients: Hydroxypropyl methylcellulose (vegetable capsule), magnesium stearate (vegetable source), silicon dioxide.
Suggested Adult Use: Take 2 to 6 capsules daily. This product may be taken with a carbohydrate-containing meal or beverage if blood sugar fluctuation issues exist. May be taken with or without food. Continued use is necessary to maintain the benefits of Best D-Ribose featuring BioEnergy Ribose™

Both products are suitable for vegetarians, and contain nothing other than listed ingredients.

Ingredients

Ribose is an essential pentose (5-carbon) sugar utilized by the body to synthesize DNA, RNA and produce energy. (Ribose is a "sugar" distinct from glucose. It does not raise blood sugar levels or lead to diabetes.) Ribose is a fundamental building block of adenosine triphosphate (ATP - the substance in which the body stores intracellular energy), the preferential source of energy for skeletal muscle and heart tissue. Studies have shown that ribose supplementation can enhance cardiac energy levels and support cardiovascular metabolism.* Further studies suggest that ribose plays a role in supporting energy recovery after exercise.* Exercise increases free radical production in muscle tissue. Ribose may strengthen and support the body's crucial antioxidant defenses.*

Caution: Insulin-dependent diabetics and pregnant women should consult their physician before use.

Research suggests that optimal heart function requires a consistent supply of essential cofactor nutrients including CoQ10, D-ribose, L-carnitine and Magnesium. Consider these other high quality Doctor's Best products in combination with Best D-Ribose for enhanced cardiovascular support: High Absorption CoQ10, High Absorption Magnesium, and Best L-Carnitine Fumarate.

Use of BioEnergy Ribose™ is licensed by BioEnergy Life Science, Inc. under U.S. Patents 6,159,942; 6,534,480; 6,218,366; 6,339,716, and other U.S. and foreign patents issued and pending.

Benefits

Supports Normal Heart Function*

A significant amount of in vitro, animal and human research suggests benefits of ribose on heart function.* Studies have shown that ribose supplementation can enhance cardiac energy levels and support cardiovascular metabolism.* Ribose has been shown in clinical trials to enhance the recovery of heart muscle ATP levels and improve myocardial function following exercise.

Studies suggest that ribose supplementation can increase the tolerability of the cardiovascular system to exercise-induced fatigue.[1] In one study, twenty men underwent treadmill exercise tests on two consecutive days to confirm the onset of fatigue secondary to exercise. The participants were then randomized to the treatment group or a placebo group. The groups received either four doses of 15 grams of D-ribose (60 grams/day total) or the same amount of placebo each day. After three days of treatment, another treadmill test was performed. The time it took to reach the specified level of fatigue was significantly greater in the ribose group than in the placebo group.

Another study investigated the ability of ribose to support healthy heart function and quality of life.[2] In a randomized, crossover design study, fifteen individuals were given 5 grams three times a day of either D-ribose or placebo. Each treatment period lasted three weeks. In patients receiving ribose, echocardiography demonstrated enhancement of heart function, reflecting a "more efficient relaxation phase of the heart". Participants also had a significant improvement in their subjective quality of life scores compared to placebo.

Scientists suggest that suboptimal heart function is a result of the heart requiring more energy to function properly. Ribose supports the heart's enhanced energy requirements, promoting optimal heart function. It does so by enhancing the stores of high-energy phosphates in heart tissue. These intermediates are necessary for the production and resynthesis of ATP. A double-blind crossover study in which 12 individuals were randomized to receive either ribose or dextrose (both administered as 5 grams three times daily for three weeks, followed by a 1-week washout period and crossover of treatments for three additional weeks) suggested significant enhancements in normal cardiac function during the period of ribose supplementation.[3]

Perhaps one of the more useful illustrations of the potential for ribose to support heart function comes from a study in which 20 rats received a continuous infusion of ribose for 24 hours (control rats received an infusion of saline). The hearts were then explanted (as they would be for heart transplants) and placed in preservation solution that was enriched with ribose for 4 hours. ATP levels were measured from tissue biopsies and revealed that 10 of the ribose-treated hearts had ATP levels higher than 12.3 micromoles per gram whereas saline-treated hearts (controls) had lower ATP levels, with 20% showing levels below 10 micromoles per gram of tissue. This provides support for the hypothesis that ribose may enhance the preservation of ATP levels in cardiac tissue, promoting normal heart function.[4]

Continued on reverse side

Further animal studies have shown that ribose significantly enhances heart function after experimentally induced cardiac depression. Rats were injected with isoproterenol (a drug that stimulates sympathetic nervous system function) and had their abdominal aorta constricted to induce depression of heart function and reduce cardiac ATP levels. The decrease in ATP was primarily responsible for the depression of heart function. Continuous infusion of ribose for 24 hours replenished ATP concentrations to normal levels and normalized heart function in these animals.[5]

Ribose May Strengthen and Support the Body's Crucial Antioxidant Defenses*

Ribose may support the body's innate antioxidant mechanisms while promoting an antioxidant effect of its own. Intense exercise and other strenuous activity can induce the production of free radicals. Preliminary studies suggest that ribose can attenuate some of the effects of oxidation seen after performance of intensive exercise.

One small human study indicated that ribose administered at a dose of 7 grams before and after a bout of cycling exercise may reduce free radical production.[6] Seven volunteers ingested either ribose or placebo both before and after intense exercise. Markers of lipid peroxidation, including malondialdehyde, significantly decreased in the ribose-supplemented group, while increasing in the control group. The results of this study indicate a possible effect of ribose in supporting antioxidant activity.

Supports Healthy Energy Levels in Heart and Muscle Tissue*

After bouts of intense exercise, ATP levels have been shown to decrease by an average of 15 to 20%.[7] The amount of ATP stored in the muscle is limited and so the body must have the potential to rebuild ATP stores. ATP is the fuel necessary for the integrity and function of a cell. In addition, several studies have found correlations between ATP content and heart function.[1] Research that was also alluded to above suggests that ribose stimulates ATP synthesis and supports heart and muscle function by enhancing ATP levels in cardiac and muscle tissue. D-ribose is an essential building block for the synthesis of ATP through the pentose phosphate pathway.

The results of ribose supplementation enhancing ATP levels in muscle are evidenced by studies suggesting beneficial effects on anaerobic performance. In a randomized, placebo-controlled crossover study assessing the effects of acute ribose supplementation, participants receiving the ribose supplement had increases in mean power (a measure of average overall muscular strength output during the sprint) and peak power (a measure of the highest muscular strength output during the sprint) when undergoing a series of cycle sprints.[8] While this effect was not noted in all of the six short cycling sprints that the participants underwent, the study does illustrate the potential benefits of ribose on ATP production and, secondarily, on enhancing exercise performance.

A second placebo-controlled trial investigated the effects of four weeks of ribose-supplementation (10 grams/day) on male bodybuilders. Of the 20 participants who were recruited, twelve completed the study. Each subject participated in a heavy-resistance training program designed to increase skeletal muscle mass. The effects of ribose on body composition (body weight, body fat, lean body mass, fat mass, and bone mineral content) were also assessed. The results suggested that ribose increased total work capacity and bench press strength compared to placebo, without altering body composition.[9]

Supports Energy Recovery After Exercise*

Animal studies have suggested that the administration of ribose after exercise increases the rate of adenine salvage by five to seven-fold in muscle tissue[7], supporting energy recovery after exercise. When ATP is utilized by muscle tissue, the degradation products include adenine nucleotides (Adenine is one of two purine bases that is a component of DNA). Adenine is recycled to synthesize DNA, and the salvage of adenine within the muscle tissue is crucial to energy recovery. Studies have shown that the presence of adequate ribose concentrations is the rate-limiting step in the purine salvage pathway. Therefore, increased adenine salvage could potentially help in the recovery and regeneration of ATP after intense bouts of activity.

A study investigated the effect of oral intake of ribose on the synthesis of AMP, a precursor to ATP.[10] Participants performed intense cycle training for seven days. They then received either ribose (at a concentration of 200mg/kg body weight, which is equivalent to 14 grams per day for an average 70 kilogram male) or placebo three times a day for the following three days. Exercise tests were performed again on day 4. Muscle biopsy samples were taken before the first training session, immediately after, and again five hours, 24 hours, and 72 hours after the last training session. No differences were seen in exercise performance between the groups. The intense exercise caused the ATP levels in muscle to decrease in both groups. However, at 72 hours post-exercise, the ribose group exhibited a much higher ATP level than the placebo group. The muscle levels of critical building blocks for ATP, including total adenine nucleotides (TAN) and inosine 5'-monophosphate (IMP), were also significantly higher in the ribose group compared to the placebo group at 24 hours after exercise. Ribose-supplementation was shown to enhance the resynthesis of ATP after intense exercise.

*This statement has not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure or prevent any disease.

Scientific References

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